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CONTENTS.

Minutes towards a History of some American Species of Melolontha particularly injurious to Vegetation 1
On the Culture of Lucerne: translated and abridged from the Course of Agriculture of the Abbe Rozier 13
Extracts from a Treatise on Horticulture. By Joseph Hayward, Gent.: London, 1818 . . 31
Register of the Seasons . . 44
On Grasses and other Plants . 49
On Rail Roads 51
The Disease in Pear Trees . . 79
Orchard Grass 81
Potatoes 83
Annual Cattle Show 85

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[The following essay upon the natural history of the Rose Bug, was prepared by Dr. T. W. Harris of Milton, with a view to the premium offered by the Massachusetts Society, for promoting agriculture, for the best essay on this subject; but the professional avocations of the amiable and learned writer having prevented the completion of it within the period fixed by the Trustees, he had resolved to suppress it. The progress which he had made, having come to the knowledge of the President of that Society, he urged Dr. Harris to lay it before the Trustees in its present state, and they were pleased to award the Society's premium to the author. We think the readers of this journal will feel obliged to us for inserting it.]

MINUTES TOWARDS A HISTORY OF SOME AMERICAN SPECIES OF MELOLONTHÆ PARTICULARLY INJURIOUS TO VEGETATION.

Nempe *Melolontha* dicitur, quia pomorum est pernicies.
BOCHART.

THE Linnean genus SCARABÆUS is very abundant in species, and exceedingly numerous in individuals of some species. These insects are easily recognized by their moveable horns, or *antennæ*, projecting above the mouth, and terminated by several lamellated, or leaf-like joints, whence they have received the name of Lamellicorn beetles. This genus contains insects differing much in external appearance, and in their modes of life, and has therefore been subdivided into several smaller genera by the Entomologists who have succeeded Linné. De Geer distinguished three families, according to their habits, which he called *Scarabés de terre*, (Earth-beetles,) *Scarabés des arbres*, (Tree-beetles,) and *Scarabés des fleurs*, (Flower-beetles.) Those

10921

of the second family are most interesting to the agriculturalist, because of their extensive ravages. They are included by Fabricius in his genus MELOLONTHA, a word used by the Greeks to distinguish these same insects, and which signified, according to Eustathius, that they were produced from or with the flowers of apple-trees.* The MELOLONTHÆ are called in England *dorrs* or *chaffers*.

The genus MELOLONTHA may be characterized as having the *body* oblong, oval, and convex; the mouth covered above by a thin plate, called *clypeus*, beneath which are situated the *antennæ*, consisting generally of ten joints, the terminal ones united by one end to a common centre, and expanding like the leaves of a book: the *thorax* (situated behind the head) convex, more or less quadrate or trapezoidal; immediately behind this, and between the wing-cases, a small triangular piece called *scutellum;* wing-cases or *elytra* convex above, not embracing the sides of the body, and leaving the posterior extremity exposed: legs of moderate length; the middle part or *tibiæ* of the anterior ones armed with two or three lateral teeth; and each foot, or *tarsus*, consisting of five small joints, and terminated by two strong claws or *nails*.

The general habits and metamorphoses of these insects are invariable; a description of those of the common cockchaffer of Europe, (MELOLONTHA *vulgaris*, *F.*) will serve to elucidate those of the whole genus. These are detailed by Latreille, (in the tenth volume of his Histoire Naturelle, embodied in Sonnini's Buffon,) and by Olivier, in the first volume of his Entomology.

* εκ της των μηλεων ανθησεως. Dumeril derives the word from μηλον, an orchard, and νυθος, dung. The French name is *hanneton*, probably a corruption of *aliton*, from *ala* and *tono;* to make a loud noise with the wings. By several critics the *Jelek* of the Hebrews, translated *canker-worm*, was considered as some insect of this genus. The words of Nahum, III, 17, appear particularly characteristic of the manners of the nocturnal species; "which camp in the hedges in the cold day, but when the sun ariseth they flee away, and their place is not known where they are."

This insect devours the leaves of trees and shrubs. Its duration in the perfect state is very short, each individual living only about a week, and the species entirely disappearing in the course of a month. After the sexual union has taken place the males perish, and the females enter the earth, to the depth of six inches, or more, making their way by means of the strong teeth which arm their anterior tibiæ: here they deposit their eggs, amounting to nearly one hundred in number, from every female, which are soon after abandoned, and the females ascend to the surface, and, after languishing a few days, perish also.

From the eggs are hatched, by the warmth of the earth, little whitish grubs, called, in France, *vers blancs*, each provided with six legs, situated near the head, and the mouth furnished with two strong jaws. They live on the roots of plants and other vegetable substances found in the ground; gradually increase in size, and change their skins once a year, about the commencement of spring, after which they approach nearer the surface in search of food; for during the winter they do not eat, but, having penetrated below the reach of frost, remain torpid until the succeeding spring. At the close of their third summer they cease eating, and penetrate about two feet deep into the earth: there by its motions from side to side the grub forms an oval cavity, which is lined by its excrements, and some glutinous fibres, in which it is changed to a pupa by casting its last larva skin. In this state the legs, antennæ, and wing-cases are visible through the transparent skin which envelopes them, but appear of a yellowish white colour; and thus it remains until the approach of the ensuing spring, when the thin film which encloses its body and limbs is rent, and the perfect insect digs its way to the surface of the ground, where the superabundant moisture with which it is imbued, is exhaled, and it expands its wings and takes flight.

According to Kirby and Spence the grub of the cockchaffer sometimes destroys whole acres of grass, by feed-

ing on its roots. It undermines the richest meadows, and so loosens the turf that it will roll up as if cut by a turfing spade. About seventy years ago, a farmer near Norwich in England, suffered much by them, and, with his men, gathered eighty bushels of the beetle. In the year 1785 many provinces in France were so ravaged by them, that a premium was offered by government for the best mode of destroying them. They do not confine themselves to grass, but eat also the roots of wheat and other grains.

In their perfect state these, with several other species, act as conspicuous a part in injuring the trees as their grubs do in destroying the herbage. Besides the leaves of fruit-trees they devour those of the sycamore, the lime, the beech, and the elm. Mouffet relates that, in the year 1574, such a number of them fell into the river Severn, as to stop the wheels of the water-mills; and, in the Philosophical Transactions it is stated that, in the year 1688, they filled the hedges and trees of Galway in such infinite numbers, as to cling to each other like bees when they swarm; and when on the wing darkened the air, annoyed travellers, and produced a sound like distant drums. In a short time the leaves of all the trees for some miles round were so totally consumed by them, that at midsummer, the country wore the aspect of the depth of winter.

Another chaffer (Melolontha *vitis*, F.) is sometimes exceedingly injurious to the vine. It prevails in certain provinces of France, where it strips the vines of their leaves, and also devours those of the willow, poplar, and fruit-trees.

The animals and birds, appointed to check the ravages of these insects, are, according to Latreille, the common dung-hill fowls, different species of owl, the European goat-sucker or night hawk, (Caprimulgus *Europæus*,) bats, rats, the weasel, (Mustela *vulgaris*,) the martin, (Mustela *foina*,) and the badger, (Ursus *meles*.) To this list may be added the common crow, which devours not only the perfect in-

sect but their larvæ, for which purpose it is often observed to follow the plough. Our own country abounds in insectivorous beasts and birds, and, without doubt, the more than abundant MELOLONTHÆ form a portion of their nourishment.

We have several allied species of MELOLONTHA, whose injuries in the perfect and grub state approach to those of the European cock-chaffer. The most common one is the M. *quercina* of Knoch ; (in Melsheimer's catalogue ;) it is not described by any author to which I have had access. It is of a dark chestnut-brown colour, glabrous, punctate; the breast pubescent; and each elytron with three elevated lines: length eight tenths, breadth nine twentieths of an inch. This insect agrees very well with the figure and description of M. *Fervida* of Olivier; but, on the authority of Mr. Say, it is considered as the species described by Knoch (in his Neuv. Beiträge zur Insectenkunde) by the name of *quercina*. In its perfect state it feeds on the leaves of trees, particularly of the cherry-tree. It flies with a humming noise in the night, from the middle of May till the end of June, and frequently enters houses, attracted by the light. The grubs devour the roots of grass and other vegetables: in many places the turf may be turned up like a carpet, in consequence of the destruction of the roots. The grub is a white worm, with a brownish head, and when fully grown nearly as thick as the little finger.* It is eaten with avidity by crows and fowls. The perfect insect is devoured by some insectivorous animal, which frequents our gardens for that purpose, and whose beneficial foraging is detected by its abundant excrement, filled with the wing-cases of the MELOLONTHA.

M. *balia*, (Say,) a smaller species than the *quercina*, may,

* There is a grub, somewhat resembling this, which is frequently found beneath manure-heaps, and is commonly called *muck-worm;* it differs, however, in some respects, from that of the MELOLONTHA, and produces an insect generically distinct, which is described as the *Scarabæus relictus*, by Mr. Say.

according to Mr. Melsheimer, "be found in its proper season in vast numbers under the deciduous leaves of forests: during the night the millions of wings that fan the air produce a loud humming sound, not unlike that emitted by the enraged occupants of a humble-bees' nest." This species, with another, M. *hirsuta*, (Knoch,) are found in Massachusetts, but not in such quantities as the *quercina*. The *balia* is of a light chestnut-brown; head and thorax blackish brown; the former and the breast beneath hairy. It is rather more than thirteen twentieths of an inch long. M. *hirsuta* is dark chestnut, and hairy; the thorax with dilated punctures, and the wing-cases with five or six longitudinal series of hairs on each. Length seven tenths of an inch.

Several other species are common here, but their specific names are at present unknown to me. Of the smaller ones, are some which attack the wild rose and whortle-berry bushes. These are M. *vespertina* and M. *sericea* of Knoch, and M. *iricolor* of Say. About the last of June and first of July the two first of these species may be found in the evening on the Rosa *rubiginosa*, in great abundance, and generally paired. Mr. Melsheimer says that M. *iricolor* "abounds in hilly and mountainous situations, where, in the month of May, the time of the sexual union of the species, it may be seen flying amongst the whortle-berry bushes in profusion."

These species are *nocturnal* insects,* never appearing,

*The genus Melolontha, as constituted by Fabricius, contains a vast number of species, differing greatly in external appearance, and somewhat in modes of life. Fabricius describes 149 species, and Schönherr, after separating those which constitute the modern genera Anisonyx, Glaphyrus, Amphicoma, Rutela, and Hoplia, enumerates 226 species of Melolontha, to which additions are constantly making from the discovery of new species. Hence the genus requires further subdivision. The bases of these subgenera have been pointed out by Latreille, Knoch, and Schönherr, and some have already been established. I would restrict the name of Melolontha to those species which have more than three lamellæ to the club of the antennæ, like the *vulgaris* of Europe, and of which we have an indigenous example in the M. *decemlineata*, of Say, (M. *occidentalis*, Herbst?) Our

except by accident in the day, during which they remain under the shelter of forests, or concealed beneath the leaves of shrubs and grass. Others are truly *day-fliers*, committing their ravages by the light of the sun, and always present to our observation.

One of them appears about the middle of May. It eats the leaves of the pear-tree, and feeds also on those of the poplar and oak. It is a large insect, and was described by Linné as the SCARABÆUS *lanigerus*. The body is of a broad oval shape, and compressed or flattened; the head and thorax yellow, bronzed; the wing-cases pale yellow, punctate; the legs brownish yellow with shades of green; the body beneath green-bronzed, and clothed with long yellow down. Length nearly one inch; breadth rather over half an inch. It is not constant in its appearance; in some seasons being found in great profusion, when, by shaking the young pear-trees, any number of them may be obtained.

Another large species attacks the grape-vine. It is the SCARABÆUS *punctatus* of Linné. The wing-cases are testaceous or brownish-yellow, with three distant black spots on each: the thorax darker, slightly bronzed, with a black spot each side; the head green-bronzed round the eyes; the body beneath and the legs deep green, bronzed. Length one inch, breadth over half an inch.

A small species also attacks the vine; it is closely allied to the M. *vitis* of France; but, fortunately, its ravages are not so extensive as those of the latter. It is the M. *varians* of Fabricius: Is of a broad-oval shape, the elytra testa-

common species *quercina*, *hirsuta*, *herticula*, *balia*, and some others might receive the generic name PHYLLOPHAGA. M. *vespertina*, *sericea* and *iricolor* would form another subgenus, which might be called STILBOLEMMA, unless they are included in SERICA, MacLeay, or OMALOPLIA of Megerle; the characters of their genera I have not seen. M. *pilosicollis*, *longitarsa*, and *moesta* of Knoch and Say should each constitute a subgenus. The latter (with M. *sordida* and *frondicola*, Say?) belongs to Kirby's genus APOGONIA. From the singular manner in which the nails are divided at tip, I would call the *linearis* of Schönherr DICHELONYX.

ceous; the central part of the thorax, the head around the eyes, the body beneath, and the legs blackish green, and bronzed, in the male; in the female these parts are of a pale brown colour. Length of the male seven twentieths, breadth one fifth of an inch. Length of female two fifths, breadth five twentieths of an inch. It feeds on the cultivated and wild grape-vine, and also on the sumach.

The *rose-chaffer*, or *rose-bug*, as it is commonly called, is also a diurnal MELOLONTHA. It is, exclusively, an American insect, and presents such peculiarities in form as would warrant its separation from the genus MELOLONTHA,* although it agrees with others of the genus in habits and œconomy.

This species is described by Fabricius as MELOLONTHA *subspinosa*, because the thorax is armed, on each side, with a blunt spine or tubercle; it is called M. *polyphaga* by Melsheimer, probably because of its voracity; *elongata*, by Herbst, from its elongated form; and *angustata*, by Beauvois, from the narrowness of its thorax. A description of this well known insect would be superfluous.

As to its habits—among the most remarkable are its voracity and salaciousness. It attacks, without much discrimination, almost every tree, shrub, and plant, such as the oak, elm, cherry, and apple trees, the rose, sumach, and elder shrubs, and even herbaceous plants, particularly the common white-weed, CHRYSANTHEMUM *leucanthemum*. Generally, during the day-time, we find these insects pair-

* STENOTHORAX would be an appropriate name for the subgenus having the *subspinosa* for its type.

SCARABÆUS *lanigerus*, Linnæus MELOLONTHA *lanigera*, Fabr. has been referred to the genus RUTELA; but Schönherr says it is not a RUTELA, and arranges it between M. *fastuosa*, and M. *aurata*, F., belonging to the genus ANOMALA? it may therefore be considered as the type of a new subgenus. See Schönherr's Synonymia Insectorum. III. p. 504. SCARABÆUS *punctatus*, Lin., MELOLONTHA *punctata*, Fabr, or RUTELA *punctata*, Latreille, belongs to Mr. MacLeay's genus PELIDNOTA.

MELOLONTHA *varians*, Fabr. is congeneric with the ANOMALA *vitis* of Megerle and Köppe.

ed, the male holding the female closely embraced, even when not *in coitu*. The male is readily distinguished by the greater length of the legs, and the elongated, pointed extremity of the body.

The rose-chaffer makes its appearance at the time of blossoming of the damask rose, which usually happens about the middle of June. It is remarkable that it does not attack the cinnamon rose, which blooms earlier, and is often found on the elm and oak before it appears on the garden and wild rose. It continues about four weeks, and then suddenly disappears, and in three or four days scarcely an individual is to be seen. The first *rose-chaffer* that I observed the present year (1826,) was discovered on a small elm shrub, on the sixth of June; none had as yet appeared on the rose. The general disappearance of these insects took place on the eighth of July, although a few individuals still remained on the flowers of the elder, as late as the fifteenth of July. A vulgar notion prevails that the rose-bug turns into a green horse-fly, because the common Tabanus makes its appearance about the time that the former disappears. This opinion is incorrect, though not more inconceivable than the known metamorphoses of insects.

After the sexual union is accomplished the males perish: you may then see thousands of them dead on the ground beneath your rose-bushes, and you will seldom find a female among them. The latter at this time enter into the earth to deposit their eggs. I have found the female more than a foot below the surface, where she was probably preparing to oviposit. Towards the termination of their ravages the females are frequently found solitary, seem considerably defaced, the downy coat which covers their thorax and elytra being rubbed off. From this circumstance we may conjecture that these individuals have already entered the earth and deposited their eggs, and have

returned to the surface to linger a few days without further sexual union.

I have not ascertained the period when the larva is hatched, nor the length of time that expires before it attains its growth. Nor am I positive as to the identity of the larva; although I have strong reasons for believing that what I have taken to be such is really so; further observation is however necessary. The supposed larva is a small white grub; the head covered with a corneous shell of a yellowish colour; the mouth armed with strong mandibles or teeth; and the anterior extremity furnished with six short feet; a dark line runs down the back, occasioned by the dorsal vessel, containing a blueish fluid, which is conspicuous from the transparency of the skin. The larva moves with considerable celerity when first taken out of the earth: it is about half an inch long, and one line in diameter. That it is the grub of a MELOLONTHA is certain from its close resemblance to that of others of this genus; that it is, most probably, the larva of the rose-bug is to be inferred from its being found in the same location as the pupa, and in considerable quantities.

The *pupæ*, from which I obtained rose-bugs, were found, early in June, (1826,) three or four inches beneath the surface of the ground. They are of a yellowish white colour, which gradually becomes darker as they approach the perfect state. In the pupa the rudiments of the wings, the antennæ and the legs are discoverable, folded under the body, and enclosed beneath a thin membrane, which wraps each separately; the eyes appear as two blue spots; the dorsal segments of the body are prominent in ridges; the tail is acuminated, and retains upon it the exuviæ or cast-skin of the pupa, until a few days before it throws off its last covering, and emerges from the earth a perfect insect. This last and important change is not effected but by the greatest efforts, during which the pupa appears to writhe in agony, until, by its continued exertions, it bursts

its membranous shroud, and crawls to the surface, where its wings are expanded and dried, and it becomes, from a grovelling worm of the earth, an animated tenant of the air. This interesting metamorphosis I had the pleasure of witnessing through the side of a glass vessel containing earth in which I had placed several of the pupæ.

An insect in its larva or grub state may be said to be *in embryo;* as its organs are more and more developed, the different *membranes*, or skins, are successively ruptured and cast off, and when it has finally extricated itself from its last covering, and emerged from its mother earth, it bursts into life a perfect adult, and finds itself endued with new powers, and feels the influence of new desires. In this state, only, is it capable of continuing its species, and furnished with wings to carry it through the air in search of companions and food.

Rose-bugs are eaten greedily by fowls; but young chickens sometimes suffer severely from swallowing them alive. A simple remedy consists in pouring sweet-oil down their throats. When the powers of the rose-bug are exhausted it falls to the ground, and furnishes food for various insectivorous animals, particularly ants. In France, a large insect, called *vinaigrier*, (Carabus *auratus*, Lin.) devours the female Melolontha *vulgaris* at the moment when she is about to deposit her eggs. I have taken one specimen of this fine Carabus in this state, and we have several other species which are equally predaceous, and which probably contribute to check the increase of our native species of Melolontha.

French writers mention several methods which have been proposed for the extermination of these insects. Most of them are ineffectual.* Buchoz, in his *Histoire des Insectes nuisables*, I., 132, says, that Christian Kleeman, in a memoir sanctioned by the Electoral Palatine Academy, gives the history of that species called by the French *Hanneton vul-*

* See Nouv. Dictionaire d'Histoire Naturelle ; article *Hanneton.*

gaire. His observations were made in 1761 and 1762, when these insects were very numerous and destructive. He recommends making a general pursuit of them; declaring that he had killed more than one thousand in one day. This I suspect will prove to be the best method. It has been found useful to strew upon the grape-vine air-slacked lime, which causes the rose-bugs to abandon it. Fires by night do not attract them. I have held a bright light close to them, in a dark night, without in the least exciting them; and although this light was exhibited in the open air, in their immediate vicinity, for a long time, not one rose-bug approached it. The Abbe Rosier, in his *Cours d' Agriculture*, (article *Hanneton*,) advises to collect and destroy the perfect insect for several years in succession. This should be made a general pursuit in order to be effectual; and females and children might be employed in it.

The causes that contribute to the growth and increase of the larvæ are not sufficiently understood. The severity of winter, and the coldness and moisture of a succeeding spring, do not always appear to check the numbers of the perfect insect, which are often, according to Olivier,* developed in greater abundance after such seasons. Neither can we predict a great increase from an abundant oviposition; for the eggs may not be hatched, the larvæ may perish, or the pupæ remain too weak to undergo their last metamorphosis. On the contrary, a small number of eggs, deposited under circumstances favourable to their being hatched, and the larvæ perfected without accident, will cause an increased quantity of the perfect insects.

Certain localities are thought to be favourable to the increase of the rose-bug; what these are I have not ascertained; but should imagine that a warm, fertile, and rather dry soil, which is not disturbed by the plough or spade, would furnish an appropriate *nidus* for the eggs.

* Olivier's remarks refer to the M. *vulgaris.*

ON THE CULTURE OF LUCERNE: TRANSLATED AND ABRIDGED FROM THE COURSE OF AGRICULTURE OF THE ABBE ROZIER.

There is no branch of agriculture which has been more neglected in the State of Masssachusetts than that of the cultivated grasses. Till within a few years our farmers rarely sowed any grass seeds, but those of clover and herd's grass or timothy, as it is called in the middle States. If the farmer should say, that they are good enough for all their purposes, our reply would promptly be, how can you know that until you try others? That there are better grasses than either of them for certain purposes, and on certain soils, we know.

The objections to red or Dutch clover are numerous. It is apt to be winter killed, much more so than the plant we shall recommend in its place; in strong soils, it is too luxuriant; its stalks are coarse, and are rejected by all but very hungry cattle; its leaves are very apt to fall in drying, and every time the hay is removed; lastly, it lives but two years; if it did not sow itself, when left to stand till herd's grass is ripe, there would not be a trace of it the third year. These are serious objections. There are some objections to herd's grass, though smaller in degree. It is not well adapted to dry soils; it is a late grass, gives no early feed, and no after-math or after feed to any valuable extent. We shall speak of its partial substitute hereafter,—we mean the Orchard grass. This grass has been the subject of discussion these thirty years, but it is only within ten or fifteen years, that its merits have been admitted, and that it has been cultivated for some purposes in preference to Herd's grass. The Connecticut farmers, we believe, were the first who cultivated it in New England, and John Prince, Esq. was the person who first introduced it into this vicinity. It may be now considered as having fairly overcome prejudices, and when its seeds can be easily procured and at a cheap rate we shall see as many fields of it as of herd's

grass; the latter, however, will always be preferred in low lands. It is not to us extraordinary that it did not make its way earlier. Our farmers have a contempt for every thing new, especially if it is proffered by "book farmers." It was more than forty years after "Spinach" was introduced into the gardens of the opulent before you could buy it at Boston market, though it had been a regular and important article at Covent Garden, and in the Paris markets, for more than one hundred years. The disgrace of being so slow to receive valuable novelties is not confined to *our* farmers and gardeners. The medical faculty of Paris proscribed as poisonous the potato one hundred years after that plant had raised millions of vigorous, and athletic troops, who, under Marlborough, had beaten the finest armies of France! Let us delay our translation one moment more, by saying that even now the Salsafy can hardly be said to be a regular marketable article; that the Rhubarb was twenty years in coming into favor, and that the Sea kale, the favorite vegetable of Great Britain, cannot find one intelligent cultivator, who will tempt the Boston gentlemen with this luxury.

As Orchard grass is now admitted to be worth cultivating, we may hope that Lucerne, or as the French call it, Luzerne, will have a fair trial as a substitute for clover. Will Lucerne bear our climate? It will; it is hardier than clover. The late Mr. John Gore had a field of it at Dorchester nearly twenty years ago; its early, vigorous growth attracted notice; and it endured many years. The writer of this article received a pint of the seed of Lucerne from Florence, under the name of Lupinella, by which it is known in Italy. He sowed it five years ago; not a plant has ever died. His experience enables him to state, that it starts earlier than clover, grows more rapidly. On this day, April 30, 1827, it is nine inches high, and several inches higher than clover by the side of it. It has been cut every year four times; its stalks are not so coarse or woody as

those of clover; its leaves are more numerous; it is eaten greedily by cows and horses, both green and dry. Such is the experience derived from the culture of two rods square only. An half acre has now been sown with it the present year. We shall now proceed with the translation of the Abbe Rozier's article, under the head of Luzerne. France has cultivated this grass for a century at least, and no man could be a better judge of it than this learned agriculturist.

From Rozier's Course of Agriculture.

"OF THE SOIL ADAPTED TO LUZERNE."

"Many authors assert that it succeeds in all sorts of soil. This assertion as a general one is true, but it is very false as a particular one. I have often said in the course of this work, that you may lay it down as a safe rule in agriculture, that the roots of plants will show what sort of soil they require. The root of the Luzerne is (what we call) tap rooted; has few fibres (or small roots) and runs directly down as soon as it finds a soil adapted to it. It is not uncommon to find plants of Luzerne whose roots are six, and sometimes even ten feet long. It is clear from this fact, which I certify to be true, that this plant would not succeed, or would grow poorly in a soil purely stony or sandy; in a strong, clayey, compact soil, or even in a vegetable soil whose thickness does not exceed from six to twelve inches, and which rests upon a basis of gravel or clay. The roots in that case cease to run down, and at the least drought the plant suffers, languishes, and afterwards perishes. The great point is to seek a deep soil. The best soil for it, doubtless, is one that is both light and substantial. Intervale lands have the requisite qualities, rich sandy loams, and generally all lands which are situated at the foot of hills or mountains, because they are constantly enriched by the earth brought down by rains. On the quality of

the soil depends the duration and beauty of the Luzerne. In suitable soils, when none of the accidents to which we shall advert happen to it, it will last in the southern provinces (of France) from ten to twenty years. Its duration diminishes in proportion as the soil is less adapted to it, and sometimes it will not last more than four or five years or even less; in this case it is hardly worth while to sow it, except as an alternate crop, or to restore a field exhausted by over cropping with wheat."

[Note.—Though the Abbe Rozier would seem to restrict the culture to the best soils only, yet he admits that other writers contend that it is fitted for any soils; and the land on which we have seen it flourish here is not remarkable for its goodness; any good loam easily penetrated by its roots would suit it; but no doubt, a plant so luxurious in its growth, and with such a quantity of leaves, could not sustain drought on a gravelly or clayey soil.]

Of the choice of seed and the time of sowing.

The seed is usually gathered only from old fields of Lucerne, which are about to be destroyed, and in that case you leave it to dry on the stalk, till the first frosts. As the seed vessel or pod of this plant is in a spiral form, and opens with difficulty, the farmer is not pressed as to the time of thrashing out, or harvesting the seed. In the northern parts of France the grass should not be cut in the year in which it is intended to gather the seed; but in the south of France you may make a crop of early hay, and the second crop will ripen its seeds. [Experience has shown, that we may in America take a first crop of hay, and that the second growth will ripen its seeds in great abundance.] It is very important, that the seeds should be thoroughly ripe, otherwise they will not vegetate. The seeds should acquire a brown colour, or else they will come up thinly, and not cover the ground. When you judge that the seed is ripe enough, you cut it in a dry day, and leave it exposed to the heat of the sun several days running, after

which, it is carried under cover, in order to be thrashed on some dry day in the following winter. I have remarked that the pods open with great difficulty, and that the seeds come out very hardly. You must not then be weary in thrashing it thoroughly, in winnowing it often, and in thrashing that which has been winnowed—in short, it requires patience to separate this seed; of course, the winter, as a season of leisure, is chosen for this purpose. You must take care not to throw the chaff on the dung heap, for many seeds will still remain, and if carried out with the dung will grow and be difficult to eradicate, or destroy. Many authors maintain, that the seeds of this plant are not good for sowing after the first year, but the Abbe de Rozier's experience was to the contrary, though he thinks it safest to sow new seeds, but by no means to throw away old seeds.

Of the proper time of sowing Lucerne.

To point out a precise moment would lead to error. It depends on the climate and the season. In the south of France there are two seasons, one in the course of September, and the other at the end of February, and so on into March, and even later, even till the middle of April. The sowings in September gain one year; the next season following the sowing, you cut the Lucerne like all other grasses; in that case (of fall sowing) the plant flowers later the first year, and you cut but one crop. [In the northern parts of the U. States we cannot sow in autumn; the plants would be winter killed.] Mr. Rozier says, that in the northern parts of France, the sowing must be governed by the season, and may be done as soon as the frosts have ceased, and should not be regulated by Saint's days. We should not be in haste to take a crop, and it is prudent to take but one the first year, in order not to exhaust the plant, and especially to permit it to grow so thick, as to stifle all pernicious weeds. When the Lucerne has once

taken hold in a field, it demands very little care. Some recommend thin sowing in order that the root may have room to send up many stalks. Mr. Rozier on the other hand advises to sow it thick, because all the seeds will not grow, and the strong plants will destroy the weaker ones, but he admits that too thick sowing is injurious. "I think (says Monsieur Rozier), that it will succeed, if sowed with wheat, but I have never tried it." [We know that it will.] —Editors. "We cannot estimate *exactly* the quantity of grain estimated by weight which should be sown on a given space of ground; so much depends on the nature of the soil, and the time of sowing. If sown in September, it should be sown thicker, for it has to encounter ants, birds, and overflowing rains of winter. In spring it has fewer risks to encounter. [In our country, at least, in New England, fall sowing will never answer.]—Editors. You may, however, say, that upon a surface of four hundred square toises [one third of an acre] you ought to sow something more than one sixteenth of a hundred weight, (say seven pounds.) This would be at the rate of twenty one pounds to the acre. If you can procure good seeds from a distant province, the plant will gain by the exchange. The planters in the north of France were for a long time persuaded, that it was absolutely necessary to procure their seed from the south, and they were right, because the plant had not then become acclimated, but at present, these distant transportations do not take place. I am inclined to think, says Rozier, that at this moment it is better to sow northern seed in the south. I repeat it, change of seed is useful in the case of Lucerne, but not as much so as for wheat crops."

[We add, that in Massachusetts, the Lucerne ripens its seeds as freely as clover.]—Editors.

Of the preparation of the land for Lucerne.

At whatever season you sow, the land ought to be ren-

dered very fine by ploughing and harrowing, because all seeds buried under clods will never sprout. If you harrow after each ploughing, the labour will be less. It is not possible to prescribe the number of ploughings, because much depends on the nature of the soil. The nature of the Lucerne root points out the necessity of deep ploughing. The duration and the goodness of a field of Lucerne depends in a great measure, upon the success of the first year; if the seeds do not come up well, if they are sown too thin, weeds will obtain the lead over the grass. If you sow Lucerne in the Spring, two fall ploughings will much facilitate your deep ploughing in the Spring; besides, the earth is admirably divided by the winter frosts. *Winter* is an *excellent labourer.* After the last ploughing, if the furroughs are deep, you must harrow before sowing. Then sow, and harrow; first with the teeth of the harrow down, then with the flat side of the harrow, and so alternately till the seeds are well covered, and it would be well to attach a bush harrow to the harrow with teeth. [In general, these directions do not differ from our usual course in sowing clover and other grass seeds, and the same treatment which is adapted to clover will be proper for Lucerne, except that the ploughing should be as deep as possible.]—EDITORS.

Of the care required for Lucerne fields.

When the soil is adapted to the plant, and it has come up well, it requires no care. This remark does not agree with the assertions of authors, who prescribe *weeding* as necessary to success; a precaution useless, an expense superfluous, if the Lucerne has not been sown too thin. I had scarcely, says the Abbe Rozier, chosen Languedoc as the place of my retreat, than I began to sow Lucerne, and full of the ideas I had before acquired, I caused my fields of Lucerne to be regularly weeded. The peasants smiled at my care and solicitude. I asked them the reason of their ridicule,—the Lucerne, said they, will do more for itself,

than you can do for it; let it alone, it will kill the weeds without your help. For this time they were right; the part of the field which was not weeded, was the next year as good as that which had been. After that, I was not so ready to throw away my money for nothing The Abbe occupies some pages with the destructive effects of an insect, a Scarabæus, something like our rose bug, upon fields of Lucerne, but as we may never be visited with that scourge, we shall omit his remarks on this subject for the present.

Of the different crops of Lucerne [*in the same season.*]

If you give credit to the assertion of an English writer, Mr. Hall, in other respects a writer of great merit, the southern parts of France have the advantage of making even seven crops a year. Unhappily for them it is not true, be the seasons ever so favorable, even when you have water at command and can water your fields at pleasure. If you cut the plant before it is in full flower, you obtain only a watery plant of little substance, and which loses three fourths of its weight in drying. It would, besides, afford but little nourishment. Supposing that the crop should be cut from the beginning to the middle of April, is it possible that the Lucerne should have time to flower seven times in the same season? It is rare, that we can have more than *five crops.* The ordinary number in the provinces, of which Mr. Hall speaks, is four crops. If the season shall have been favourable it is a fine and rich product. No field yields numerically so much as a good Lucerne field. It is a *clear and net revenue for ten years*, which demands no culture, no advance except that of preparing the land for the crop at first; the cost of seed, and the wages of the mowers. One third of an acre, or 400 square toises of Lucerne field, are usually let for one hundred and fifty livres, or thirty dollars a year! Happy the proprietor, who has much land fitted for Lucerne.

Many persons affirm that Lucerne will succeed in any

soil; if this assertion was as true, as it certainly is false, a great part of Provence and Languedoc would be covered with Lucerne, because natural meadows are very scarce in these provinces for want of water, but experience has proved, most decisively, that Lucerne requires a deep soil, not clayey, neither too stiff nor too sandy.

In the central provinces of France, Lucerne is cut three times in ordinary years, and four times in favorable ones; and from two to three times in the northern provinces. It is a general rule that Lucerne should not be cut except when in flower; before that state, it is generally too watery, and its juices crude; after that period, it becomes too dry and too woody. Cattle should not be suffered to feed on Lucerne fields after the last cutting, nor during winter, when the ground is soft. The heads of the plants yield to the hoofs of the cattle, and injure the grass essentially. It is useful to pass a harrow over a field of Lucerne in the spring, and the crop will amply repay the expense of it. Lucerne should be cut in a cool dry time, and tended as rapidly as possible. Rains,—frequent rains while making are very injurious to this grass. Let it be cut under circumstances ever so favorable, and be perfectly dry, it must not be carried in with the dew upon it, nor moved in the very heat of the day, because, in that case it is very apt to lose its leaves, which are the best part. For this reason it should be stirred as little as possible in the middle of the day. Great care should be taken that the hay should be well cured, otherwise it is apt to heat, and even take fire. The first cutting of Lucerne in any season is the least valuable, because it is apt to be mixed with other grasses or plants. The second is the best; the third is usually very good also, but in the fourth and later crops, the juices of the plant are not so rich, and of course are less nutritive.

Of the means of renewing the vigor and growth of Lucerne Fields.

Lucerne fields will wear out in time, but you may retard its period of decline by different treatment and manures. The first, which is the most prompt, convenient and cheap, is to feed your sheep upon it after the last cutting, and even during winter.

Mr. Meyer proposed in 1768, to employ Gypsum or plaster of Paris to revive and recruit old Lucerne fields, and communicated to the œconomical society of Berne, the several experiments he had made. These experiments were repeated by Mr. Kirchburger with care, and the following were the results:

1. That a quantity of calcined plaster, equal in measure, to the quantity of oats which would be required to sow any piece of land, is sufficient to manure it.

2. That gypsum succeeds better on Lucerne fields which are rich, than on those which are poor and sandy.

3. That it produces a greater effect the first than the second year.

4. That it is less active in a moist soil than in a dry one.

5. If you sow the plaster as soon as possible in Spring, the first crop will feel the effects of it.

Mr. the Abbe Rozier adds "I acknowledge according to my own experience, that plaster is very beneficial for Lucerne fields which begin to decline; that it facilitates in a great degree the growth of the large clover; that it is very useful in meadows covered with moss."

The Abbe proceeds to recommend also air-slacked lime, which he prefers to plaster. He notices, and approves a suggestion of the celebrated Duhamel, that when a Lucerne field becomes partially disfurnished by the death of some plants, to supply their place by laying the branches of the adjoining ones, which will take root; but it seems to us that a simpler course, which we have long since adopted

with clover is preferable, which is, every spring to run over the field with a harrow, and throw in fresh seeds in the bare spots.

Of the value of Lucerne as Food.

Lucerne loses some of its value in proportion to its distance from its native soil; that is to say, it is not so nourishing, because its juices are more watery when grown in northern countries. Notwithstanding this no fodder can be compared to it in point of quality; none keeps animals in so high a state of flesh; none augments or increases the quantity of milk so much as Lucerne. These praises in all respects merited, require however some qualifications. Lucerne is heating to animals, and if you do not moderate the quantity in the hot season of the year, and especially in *Southern provinces*, horned cattle will become diseased. If you trust your labourers, they are so proud of seeing their cattle fat, that they stuff them with this food, and are unwilling to believe that it can be the cause of disease. I know of but one mode of preventing the waste of Lucerne by your servants, and labourers, and that is to mix it in equal parts with straw, not in layers, but confusedly and generally mixed. The straw contracts the smell and flavour of the lucerne; the animals eat it with pleasure, and are never injured by it. Lucerne given green to horned cattle or horses, is apt to purge them; for which reason it is a rule never to give it till it has been cut 24 hours. Care also is taken to give it in small quantities at a time, lest they should be hoven. This is not peculiar to Lucerne. The same effects are produced by green wheat, oats, &c. &c. All pasturage which is too succulent is dangerous. In case this accident of being hoven should occur, an expedient which I have tried has never failed, (says the Abbe Rosier) which is to make them swallow an ounce of nitre (salt petre) in a glass of brandy, to empty the bowels of the animal, and to make him run.

We subjoin the two following letters on the same subject to Messrs. Grant Thorburn and Son, New-York, shewing American experience as to the culture and value of Lucerne.

Directions for the Cultivation of Lucerne.

Perth Amboy, New-Jersey, July 10th, 1823.

Messrs. Grant Thorburn and Son,—Having been for eight or ten years in the successful practice of the culture of Lucerne, I think it may beneficially promote the interests of Agriculture, to offer to you a few remarks on that subject. This article (frequently denominated French Clover,) I have found from experience, to be not only the most convenient, but also the most profitable of all grasses. It vegetates quicker in the spring than any other grass; it resists the effects of drought; it may be cut four or five times in the course of a season, and will endure from ten to twelve years without renewing. Of all other grasses, it is the most profitable for soiling. I am fully of opinion, that one acre properly got in, would be more than sufficient to maintain at least six head of cattle, from the first of May until frost sets in; for before it can be cut down in this way, the first part will again be ready for the scythe. English writers have recommended the drill system for this article, but in this climate, I have found this is entirely fallacious. The proper mode is, to have your land properly prepared, to sow the seed broad-cast, and to get it in during the month of April, or in the early part of May. Fall sowing will not answer, for, like clover, when sowed late, it is found not to resist the winter's frost. It may be sowed by itself, or with spring rye, barley, or oats; but in the last case, I would recommend the oats to be cut green, and before getting into seed, by which means, an early feed for cattle may be obtained, and the soil will not be so much (if any impoverished. But the mode I would most confidently recommend, would be to sow with the Lu-

cerne, about half a bushel of common or winter rye. The effect of this is, that the rye, which vegetates quickly, serves as a nurse to the young grass, against the heat of the scorching sun; and by the time the grass attains strength to protect itself, the rye withers and apparently dies. It will, however, come forth in the spring, and mixed with the lucerne, prove a most excellent feed for cattle, and also add much to the quantity of fodder. The rye will admit of being cut green in this way, before getting into seed, two or three times before it decays. The quantity of seed I would recommend to be sowed to the acre, would be from 15 to 20lb. The kind of soil most suitable for this culture, is a dry mellow loam, but a sandy or clay loam will also answer, provided they are not wet. In a favourable season, the lucerne may be cut the ensuing fall after sowing. After the first season, you may generally begin to cut green for cattle by the first of May, which saves your young pastures, and is in every respect a great convenience, as hogs, and every description of animals, devour it with equal avidity. It produces a great quantity of seed, and is much more easily threshed out, than Clover. The second and third crops are the most productive of seed.

Yours, JOHN PATRICK.

Kip's-Bay, near New-York, November 7, 1826.

Messrs. Grant Thorburn and Son,—Last spring, a year ago, you may remember you sold to me one pound of French Clover seed, (Lucerne,) I sowed it (as an experiment) with my oats, in April of the same year. It yielded fine pasture after the oats were cut; and last Spring, when my red clover began to make its appearance, the Lucerne was full three inches above the ground. On the 11th day of May, I began to soil it, daily cutting enough to serve my three horses in my stable, and with very little

help from other grass, I have continued the soiling until this day. My horses have kept in good order through the whole season, and I have not fed them ten bushels of oats, or any other grain, during the whole time. It was richly manured with compost. I mowed it five times notwithstanding the severe drought.

Respectfully, yours, THOMAS STORM.

After having completed the extracts from the Abbe Rozier on Lucerne, we met with an English work, which is still more full on the same subject; and as it would be well to put our readers in possession of so many facts, and of such a variety of authority, as wholly to satisfy their minds of the great value of this grass, we shall insert copious extracts from this English work "the Complete Farmer,"—printed 1793.

Columella, an ancient writer, calls Lucerne the choicest of all fodder, because it will last ten years, and will bear being cut down four, and sometimes six times a year; it enriches the land in which it grows, fattens the cattle fed with it, and is a remedy for sick cattle. Yet notwithstanding it was so much esteemed by the ancients, and hath been cultivated to great advantage in France and Switzerland, for many years, it has not yet found so good a reception in England as it justly deserves; [this was written 34 years ago] nor is it cultivated here in any considerable quantity, though it will succeed as well in this country, as in either of the last mentioned, being extremely hardy, and resisting the severest cold of our climate. [This is as true in Massachusetts: it is hardier than Clover.] Mr. Roque lays it down as a maxim from his *own* practice, that Lucerne will grow on any soil, provided it be not too wet to rot the roots. The strongest land is however to be preferred, and the deeper the soil, the better will be the crop. The land should be prepared in the same manner

as for barley, and brought to a fine tilth. The Lucerne should be sown broad-cast, in fine weather, at the rate of fourteen pounds to the acre. If grain is sown with it, it should only be for half a crop, otherwise it will be apt to destroy the Lucerne, especially if the grain should prove rank; but if no grain is sown with it, the Lucerne will be better. Lucerne may be sown from the beginning of March, to the end of May. If you sow grain with it ever so thin, and it should prove luxuriant, it had better be cut green, lest it should hurt the Lucerne. The grain thus cut may be given to cattle green, or if properly dried will make excellent hay. Lucerne will not grow on newly broken-up land; it must be tilled a year or two; potatoes make the best preparation for Lucerne. In Languedoc they sow no grain with it; but they cut over the Lucerne when it is six inches high, so as to keep down weeds and other plants. In Normandy, whose climate resembles that of England, they sow grain with it. When the plants are a year old it will be proper to go over the ground with a large harrow, to root up annual weeds and grass. The harrow will not hurt the roots of Lucerne, they being very tough; this should be done in dry weather, before the Lucerne begins to sprout, and if there are any patches, where the seed miscarried, you can throw in a little seed upon them. The second year, you may run over your Lucerne with a smooth plough, *without* a coulter, to prevent the roots being too much hurt, and leave it rough a few days, then harrow it smooth. One not used to Lucerne would be apt to think that ploughing would ruin it, but experience shows the contrary. In making it into hay, it should be cut as soon as the bloom appears; it must not be spread like other grass, but lie in the swarth, like Clover, and turned in the same manner, or the leaves, which are most nutritive, will fall off. If suffered to stand too long before mowing, the stalks become too hard for cattle, and it loses much of its goodness. The hay is good for all sorts of cattle, and when

horses are fed with it, they should not have their full allowance of corn; the Lucerne answers, in a great measure, the purpose of both hay and grain. It is also the most profitable fodder to feed horses with in summer by mowing, and giving it to them green. If the land is good, the produce is incredible. Mr. Roque says he has seen it mowed five times in a season, yielding, at the five mowings, eight loads of hay per acre.

As the duration of Lucerne has been a question of dispute, this author quotes the authority of an able cultivator. "As to its duration, it will last as long as the ground is kept clean. I saw some at Mr. Middleman's at Grantham, in his garden, which was forty years old, and it was very fine." The practical cultivator says "It ought not to be cut except when it is in blossom, and that is but three times a year, but after mowing the third crop, instead of cutting a fourth, you may feed it, but when the frosts come you must take your cattle off, because they would bruise the young stalks. If it is rank in September, it is dangerous for cows, it being too feeding [hearty]; but turn horses and sheep upon it. As there is no grass, which has come to our knowledge, which gives the cows so much milk, you may let them graze in the afternoon when the dew is off, about one hour; when made hay it is likewise the best for milk; wherever it is much cultivated they prefer it to all other kinds of hay. When I was in Monosque, a city in Provence, the carriers fed their horses upon it, preferably to any other, without corn; and they were fat and in fine order. It is acknowledged to be the most feeding [hearty?] pasture, either green or in hay. I trust not barely to report, but have found it so myself. Many are apt to condemn it, but it is for want of knowledge. It has been introduced for a long number of years, but so little noticed that 21 years ago, [that is in 1772,] there were not 200 weight of Lucerne seeds to be sold among all the Seedsmen in London, and I had much ado to re-introduce it; but now, [in 1793,] there is a *prodigious consumption* of it."

[Note. The fate of this grass has been the same in the United States. More than twenty years ago, some seeds were imported and succeeded admirably, yet it is only within a few seasons that we have had any for sale; probably the want of regular Seedsmen, and the trouble of importing from France, were among the causes of its slow progress in the United States.]

"Mr. Beadle, a farmer in Kent, has fourteen acres of it, for which he had a premium. When I called upon him in *May* last, he had mowed his Lucerne, and sold it on the spot for three guineas a load. Those that bought this hay must be well acquainted with its goodness to fetch it from the spot, though they lived ten or twelve miles distant. Horses will work with it green, as well as with hay and corn; they do not sweat with it as they do with other green fodder. It is objected, that it is difficult to make; it is no more so than Clover. All hay is difficult to make in wet weather, but if the weather is bad, put it up in ricks when dry, and between every layer strow a little salt, and that will recover all the damage the rain may have done."

Another writer says, "Lucerne should be cut when the stalks are about fifteen or sixteen inches high, on an average; he cut it in three years, sixteen times, or more than five times a year; by the 9th of April, one year, some of the stalks were seventeen inches high, when no field in the neighborhood had grass more than four inches high. The same Lucerne was cut twice before any hay-making began in its neighbourhood."

Mr. Miller, who appears to have cultivated Lucerne with great success, says, that you may cut it in the month of August, the first year, or year of sowing, and feed it afterwards with sheep. It will bear three cuttings and two feedings in a season. Of its capability of resisting cold he gives the following proof:—In the *very cold* winter of 1738–9, he had some roots of Lucerne dug up and laid upon the surface from October to March, when he planted them,

and they shot out vigorously soon after; wet however will destroy the roots. Mr. Miller says, that the most profitable mode of consuming Lucerne, is to cut and give it as green fodder. This is the celebrated Philip Miller, author of the Gardener's Dict.: the most respectable authority that could be quoted. Mr. Chateauvieux of Switzerland, by planting Lucerne in rows obtained at the rate of seven tons and two-thirds of hay from an acre, in five crops in one season. Switzerland is a cold country. Mr. Chateauvieux found, that when the thermometer fell to zero the Lucerne did not suffer. Mr. John Wynn Baker of Ireland, appears to have been very successful in the culture of Lucerne. He says, that in order to ascertain how far Lucerne may be worth the farmer's attention, he made an experiment with an horse, to see how much Lucerne he would eat, so as to learn how many horses an acre of Lucerne would support. The horse he chose was a large one, and had been ploughing all day without food, and he eat forty-nine pounds of Lucerne in the course of the night. Lucerne he says at four cuttings will yield 35840 pounds to an acre. [weighed green no doubt.] This is a low calculation; an acre therefore will maintain at the rate of 49 pounds per day to each, 5 horses for 20 weeks. No natural pasture can do any thing like this; add to this, the profit of making dung all summer.

Mr. Duhamel, the famous naturalist, gives his testimony also in favor of Lucerne; he had forty tons of Lucerne (green) upon an English acre, which he computes at *ten tons* of *hay*. By this remark it would seem that he cut it while in blossom, for Lucerne if cut before it flowers, loses 80 per cent, and therefore his 40 tons would only have produced eight of cured hay. We could much extend these extracts, but we have said enough to induce those, who are convinced as we are by experiment, that it is suited to our climate, to try it extensively.

EXTRACTS FROM A TREATISE ON HORTICULTURE.

By Joseph Hayward, Gent.: London, 1818.

Although much has been written on the subjects of the following extracts, yet the views presented by Mr. Hayward are ingenious, and may be gratifying to many readers. The Aphis is to some plants, and in some seasons most pernicious, and the editors of this Journal can assert, that constant washing with strong soap suds, and even fumigation will sometimes fail to destroy them. We have washed a particular rose-bush once a week for a month, with strong suds thrown on with great force by a garden engine, without full success. Several young apple trees which stood in a remote spot in a distant field, had every shoot wholly destroyed by them. They prevail most in the severity of the drought; the reason of which seems to be, that in wet weather, particularly if cold, they are benumbed, and probably cease to feed and propagate. That part of the extracts which relates to compositions for wounds of trees, is exceedingly amusing to us, who have always laughed at these nostrums, as much as at quack medicines. The truth is, that there are many different compositions radically or essentially different, each of which may answer equally well. Any compost which will adhere and exclude the rain and air from the wound, and *also* prevent the exudation of the sap, will answer all the desired purposes. We have found a mixture of tar, rosin, and yellow ochre or Spanish brown the best we have ever used, but it should be so stiff as not to melt and run down the limb. We had some prejudices against terebinthine, or tarry substances, from a fear, that they would injure the tree, but have found no ill effect in practice. Professor Peck, recommended cheese as an excellent substance for stopping the flow of sap in grapes; we have often experienced its good effects. From some unknown cause, possibly from their being trimmed too late, say in December, all the vines in

a grapery this spring began to bleed, and to such an extent as to threaten their destruction, indeed, so as actually to kill some branches; as the case was pressing, and no cheese at hand, spermaceti was applied with perfect success.

"Although those insects and the caterpillar tribes are very destructive, they are not so great a nuisance to the peach and nectarine tree as the aphis, or plant louse; the sudden appearance and rapid increase of these insects, and which are called blights, most probably gave rise to the belief that they were conveyed by the wind; at any rate, with a superficial observer, this may strengthen the idea; and as with such an impression it would be difficult to induce a person to adopt the only means which I conceive can operate as a remedy, I shall give the following extract from the Encyclopedia Britannica.

" 'The extraordinary nature of these insects have for some time past justly excited the wonder and attention of naturalists. They were long ranked among the animals which had been classed with the true androgynes, spoken of by M. Breyniers, for never having been catched copulating, it was hastily concluded that they multiplied without copulation; this, however, was but a doubt, or at best a mere surmise; but this surmise was believed and adopted by Mr. Reamur, and though he supported it by some observations peculiar to himself, the question remained still undecided, till M. Bonnett seemed to have cleared it up in the affirmative, by taking and shutting up a young aphis, at the instant of its birth, in the most perfect solitude, which yet brought forth in his sight 95 young ones. The same experiment being made on one of the individuals of this family, that had been tried with its chief, the new hermit soon multiplied like its parent, and one of this third generation, in like manner brought up in solitude, proved no less fruitful than the former; repeated experiments in this respect, as far as the fifth or sixth generation, all uniformly

presenting the observer with *fecund virgins*, were communicated to the Royal Academy of Sciences, when an unforeseen and very strange suspicion, imparted by Mr. Trembley to M. Bonnett, engaged him anew in a series of still more painful experiments than the foregoing. In a letter which that celebrated observer wrote to him from the Hague, the 27th January, 1741, he thus expresses himself:—'I formed, since the month of November, the design of rearing several generations of pucerons, (aphides) in order to see if they would all equally bring forth young. In cases so remote from usual circumstances, it is allowed to try all sorts of means, and I argued with myself, who knows but that one copulation may serve for several generations.'—This *who knows*, to be sure, was next to avouching nothing, but as it came from Mr. Trembley, it was sufficient to persuade M. Bonnett that he had not gone far enough in his investigation. If the fecundity of aphides was owing to the secret copulation suggested by Mr. Trembley, this copulation served at least five or more successive generations. M. Bonnett, therefore, reared to the amount of the tenth generation of solitary aphides, and had the patience to keep an account of the days and hours of the births of each generation. In short, it was discovered, that they really are distinguished by sexes; that there are males and females amongst them, whose amours are the least equivocal of any in the world; that the males are produced only in the tenth generation, and are but few in number; that these soon arriving at their full growth, copulate with the females; that the virtue of this copulation serves for ten generations; that all these generations, except the first, (from the fecundated eggs) are produced viviparous, and all the individuals are females, except those of the last generation, among whom, as we have already observed, some males make their appearance, to lay the foundation of a fresh series. These circumstances have been confirmed by other naturalists: in particular we have a curious and accurate detail

of them by Dr. Richardson, of Rippon, in the Philosophical Transactions," an extract of which is given in the Encyclopedia.

Although to a common observer, or gardener, the powers of investigation, as well as patient attention necessary to complete such experiments, may appear too great for them to attempt a demonstration, and perhaps too much to be credited by some, I believe none of them will be able to adduce a proof to the contrary, of what is here stated.

It can scarcely have escaped the observation of any attentive gardener, that during the first part and middle of summer, those insects increase rapidly on the plants where they first appear; and that in the latter part of the summer, a winged and solitary aphis, resembling a small black fly, is seen at the foot of the leaf stalk of the peach tree, where no doubt it deposits its egg on or under the covering of the young bud, and as this increases, it completely shields the egg during winter, and which, (as has been noticed of some of the caterpillar tribe) on the opening of the bud in spring, is exposed to the sun and hatched.

On those parts the aphis is always found to make its first appearance on the peach tree, in the spring; and at this time, although animated, it is scarcely perceptible to the naked eye; its appearance is that of a small black speck, but if closely observed it will be seen to increase very fast in size, and before the blossoms are scarcely opened, to have produced another generation, and those proceed to multiply their numbers in the same rapid manner.

The important fact, therefore, that these creatures, like all others, are the offspring of parents, and engendered and bred on the place assigned for them, cannot be doubted, and their extreme rapidity of increase can only be prevented by an active attention, and application of some effective means of destruction, and which I shall describe.

Washing, brushing, and fumigation, are the methods generally recommended, and in use, but these are seldom

efficacious; for however minute those offspring of the great Creator, they are not without the instinct and power of protecting and defending themselves against common annoyance.

The egg in the first place is deposited so intimately with the embryo bud, that the existence of the one depends on the other, therefore liquids, applied in a natural manner, cannot reach them, and if more forcible means are used, the bud is more readily destroyed than the egg.

When the insect bursts into life, it possesses the means of curling the leaf, or raising the sap in such a manner as to shield and protect itself, and a current of water or air, unless applied with a force sufficient to destroy the object of our care, the bud, it cannot be made effectual.

But although water, smoke, or vapour, cannot be applied so as to come in contact with the insects, in their differently exposed haunts, a fine light powder, like drifted snow, will find its way into their most secluded retreats.

Tobacco dried is poisonous to most insects, and is so obnoxious to the aphis, that whenever it comes in contact with them, they immediately shift their quarters or die; and therefore tobacco in a fine dry powder, or common snuff, blown among the leaves, will find its way into every fold and corner, and by proper and repeated application, will seldom fail to effect a complete extirpation.

The best and most effectual mode of applying snuff, I have found to be by the spiral powder-bellows, or puff, an apparatus which was generally used by the hair dressers half a century back.

It must be observed, that as the eggs escape unhurt, they will after the destruction of one generation produce another; it will therefore be necessary occasionally to repeat the application, and although the tobacco or snuff of itself will not injure the most tender bud or leaf, yet when left with the insects, and their exuviæ, it may form a kind of incrustation, and obstruct its growth; it is therefore best to give

the trees a good washing, two or three days after applying the powder.

This application should not only be adopted as a cure, but as a preventive; therefore during the latter summer months, the powder should be lightly thrown on the young branches, particularly the points of the leading shoots, and it will prevent the moving aphis from distant quarters, from fixing there and forming colonies, or of depositing the eggs for the future year; indeed, if an aphis remains undisturbed a short time only, its bite will prove so venomous as to obstruct the future growth of the branches, and to prevent this in the leading branches is of the utmost importance.

The honey-dew, or excrement of the aphis, often proves injurious to trees, this should therefore be washed off, which may easily be done by throwing soap-suds on and against the leaves, but this should afterwards be washed off with clean water; for when the soap is suffered to dry on the leaves, it proves almost as injurious as the honey-dew.

On the subject of the disease and decay in trees, occasioned by large wounds and fractures, it may be supposed that enough has been said by Messrs. Forsyth and Knight, to lead to a proper understanding and management; but I am inclined to believe, that the public have not been so much benefited by the discovery of Mr. Forsyth, as he had given reason to expect, and even in cases where it might have been beneficial, it has not been much attended to; and this I think has been chiefly occasioned by both his and Mr. Knight's having said more than correct observation and experience could warrant.

I consider it useless to enter into a minute examination of the arguments of those gentlemen, for or against the composition of Mr. Forsyth, and its effects, and shall therefore select one or two short passages only, from the works of each, by way of comparison and a ground of judgment.

Forsyth says, "In the course of more than thirty years'

practice, in cultivating, pruning, and keeping of garden fruit trees, I have observed, that from natural causes, accidents, and unskilful management, they were subject to injuries of different kinds, which always diminished their fertility, and frequently rendered them wholly unproductive. All trees that bear stone fruit, are liable to emit a gum, which by producing a canker proves fatal to the health and vegetation of the trees. Most forest trees are also liable to what is called a bleeding, which proceeds from any injuries that obstruct the circulation of the juices, of those which suffer from bad management or accidents; some are injured by unskilful pruning, and lopping at improper seasons of the year, and others, by the violence of high winds, having boughs or limbs torn from their bodies, which being left in that state, exposed to all the inclemency of hard frosts, are often cracked or rent in the wood; or from heavy and soaking rains, the wounds imbibe so large a quantity of wet and moisture, as by causing a fermentation with the natural juices, brings on disease, and in time destroys the health and vegetation of the tree. These among other causes tend to produce decay and barrenness in fruit trees, as well as defects in timber, to the great loss of the public in general, as well as essential injury to the individual proprietor."

So far these remarks are just; he proceeds, "To remove those evils, and to prevent the ill consequences arising from the causes already described, I submit to the experience of the public, a remedy discovered by myself, which has been applied with never failing success to all kinds of fruit trees, and has not only prevented further decay, but actually restored vegetation, and increased fruitfulness, even in such as were apparently barren and decayed; it has produced also a similar effect on forest trees, by restoring them to soundness of timber, and healthful vegetation, and covering as it were visible nakedness, and increasing decay, with fresh and vigorous foliage. This remedy is a composition,

formerly applied in the form of a plaster, but now in a liquid state, and laid over the wounded or injured part of the tree, with a painter's brush: it is of a soft and healing nature, possesses an absorbent and adhesive quality, and by resisting the force of washing rains, the contraction of nipping frosts, and the effects of a warm sun or drying winds, excludes the pernicious influence of a changeable atmosphere. The discovery of it is the result of much reflection and study during a long course of years, and of a great variety of experiments, made at a very considerable expense, to ascertain the efficacious power of the application, nor shall I hesitate a moment to declare my firm belief, that whenever it shall be properly applied by the proprietors of gardens, orchards, and woods, it will be productive of all the advantage that can be derived from restoring, as well as preserving vigour and fertility in all kinds of fruit trees, and also for preventing decay, and promoting health and sound timber in every species of timber trees, &c."

The first composition is given thus:

"Take one bushel of fresh cow dung, half a bushel of lime rubbish of old buildings (that from the ceilings of rooms is preferable) half a bushel of wood ashes, and a sixteenth part of a bushel of pit or river sand, the three last articles are to be sifted fine before they are mixed; then work them well with a spade, and afterwards with a wooden beater until the stuff is very smooth, like fine plaster, used for the ceilings of rooms; the composition being thus made, care must be taken to prepare the tree properly for its application, by cutting away all the dead, decayed, and injured part, till you come to the fresh sound wood, leaving the surface of the wood very smooth and rounding off the edges of the bark with a draw knife, or other instrument perfectly smooth, which must be particularly attended to; then lay on the plaster, about an eighth of an inch thick, all over the part where the wood or bark has been so cut away, finishing off the edges as thin as possible; then take

a quantity of dry powder of wood ashes, mixed with a sixth part of the same quantity of the ashes of burnt bones, put it into a tin box with holes in the top, and shake the powder on the surface of the plaster till the whole is covered over with it, letting it remain for half an hour to absorb the moisture; then apply more powder, rubbing it on gently with the hand, and repeating the application of the powder till the whole plaster becomes a dry smooth surface. All trees cut down near the ground should have the surface made quite smooth, rounding it off in a small degree as before mentioned; and the dry powder, directed to be used afterwards, should have an equal quantity of powder of alabaster mixed with it, in order the better to resist the drippings of trees and rains."

To the foregoing directions for making and applying the composition, it is necessary to add the following:

"As the best way of using the composition is found by experience to be in a liquid state, it must therefore be reduced to the consistence of pretty thick paint, by mixing it up with a sufficient quantity of urine and soap-suds, and laid on with a painting brush. The powder of wood-ashes and burnt bones is to be applied as before directed, patting it down with the hand.

When trees are become hollow, you must scoop out all the rotten, loose, and dead parts of the trunk till you come to the solid wood, leaving the surface smooth; then cover the hollow, and every part where the canker has been cut out, or branches lopped off, with the composition; and as the edges grow, take care not to let the new wood come in contact with the dead, part of which it may sometimes be necessary to leave, but cut out the old dead wood as the new advances, keeping a hollow between them to allow the new wood room to extend itself, and thereby fill up the cavity, which it will do in time, so as to make, as it were, a new tree. If the cavity be large, you may cut away as much at one operation as will be sufficient for three years; but

in this you are to be guided by the size of the wound and other circumstances. When the new wood, advancing from both sides of the wound, has almost met, cut off the bark from both edges that the solid wood may join, which, if properly managed, it will do, leaving only a slight seam on the back."

On the effect of this composition, he says,

"The first trials of its efficacy were made in some very large and ancient elms, many of which were in a most decayed state, having all their upper parts broken by high winds from their trunks, which were withal so hollow and decayed, that a small portion alone of bark remained alive and sound; of these trees I cut away at first a part only of the rotten stuff from the hollow of the tree, and then applied the plaster to the place where the operation had been performed by way of internal coat of the composition. In a short time, however, the efforts of Nature, with a renovated flow of the juices, were clearly discernible in their formation of the new wood, *uniting with* and swelling as it were from the old, until it became a strong support to that part of the tree where the composition had been applied; I then cut away more of the rotten wood from the inside, applying the plaster in the same manner with the same good effects, and continued to use the knife in proportion to the acquisition of new wood; *so that from the tops of these decayed and naked trunks, stems have actually grown of about thirty feet high in the course of six or seven years from the first application of the composition, an incontrovertible proof of its good effects in restoring decayed vegetation.*

"The acidity or corrosive quality of the juice of oak trees, when obstructed in their circulation, from any of the causes already mentioned, and fermenting with the wet and moisture imbibed by the wounds from the atmosphere, will bring on disease and promote decay; for, notwithstanding the hard texture of the oak, when once the principles of decay begin to operate, the acrimonious juices feed the dis-

ease, and accelerate its progress as much, perhaps, as in trees of a softer quality and texture; but when the diseased or injured part is entirely cut away to the sound fresh wood, and the composition properly laid on, as perfect a cure has been made as I have already related in the recovery of elm trees."

He further says,

"A lime tree about eighteen inches in diameter, whose trunk was decayed and hollow from top to bottom, to which, after cutting out the decayed wood, I had applied the composition, about sixteen years ago, was cut down last year, on purpose to examine the progress it had made in the interior part, and was found entirely filled up with new sound wood, *which had incorporated with what little old wood remained when I first took it in hand.*" And again, "When the wounds in the fruit trees are so large as not to heal up in the course of a twelvemonth, I renew the composition annually, *which on its application invigorates the trees, and seems to have the same effect on them as a top dressing of dung has on land.*"

Mr. Knight, remarking on Mr. Forsyth, says,

"I had however previously examined many trees, to which Mr. Forsyth had applied his composition, in Kensington-gardens, and had observed *that it had not, in any one instance, produced the effects ascribed to it.*"

And, "the examination of the fruit trees in his Majesty's gardens there, perfectly satisfied me *of the total inutility of Mr. Forsyth's composition.*"

Again, "I had invariably answered that I had attentively examined the effect of Mr. Forsyth's composition, when applied to trees of different species; *and that his assertions respecting it were totally unfounded.*"

Now, in these strong and pointed assertions, I cannot but think Mr. Knight has gone too far; most people know that an exposure of wood to the effect of wind and wet, or the general change of weather, facilitates its decay, and that a

covering of paint, &c. retards and prevents it; at any rate it preserves the surface or exterior; and this being the case with wood cut and dried, there cannot be a doubt but, that as Forsyth says, when wounds in growing trees imbibe a large quantity of wet and moisture, it causes a fermentation with the natural juices, which brings on disease and decay, and in time destroys the health and vegetation of the tree; and therefore any covering that can be applied to defend such wounds against these injuries, must operate as a preservative, and promote the health and natural growth of the tree.

It is well known that the wood of trees is formed by annual layers of sap, which first encircles the pith, and then by protruding itself between the bark, which proportionally expands, and the last year's layer or circle of wood, it gradually concretes or becomes wood: this is continued during the summer, and forms the periodical addition.

Whenever a tree is wounded by a part of the bark being removed, or a limb or branch amputated, the sap pushes out all around the wound during the season of its flow, and annually extends itself, by sliding over the old surface until it meets, when, if not obstructed, it unites; and afterwards the annual increase, or layer of wood is formed, in uninterrupted circles, the same as if no wound had been made.

As the flow of sap over an exposed wound may be compared to that of melted tallow poured on a surface, it is obvious that a rugged surface must very much retard, if not wholly prevent, its advance.

In this view Mr. Forsyth's practice of cutting away the obstructing dead wood in hollow trees will appear rational and proper; and when, by decay, the surface of a wound is sunk or hollowed, the extension of the sap is diverted, and prevented meeting and joining; and by its projecting above the wound and round, it forms a lodgment for the rain, and becomes in consequence a vehicle of putrefaction, which extends itself through the tree.

If those observations are correct, although we may not approve the idea of his composition operating as a stimulant, and producing the effects on a tree which a top dressing of dung does on land, or of effecting the incorporation of new wood with the old, we may give Mr. Forsyth the credit of a remedy in its application, for many injuries which Nature, when left to herself, is inevitably exposed to, particularly internal decay from external exposure; but, notwithstanding we admit the efficiency of the composition in this respect, we may consider it as too troublesome and complicated in its preparation, and tedious and filthy in its application, to become of extensive use; and adopting Hitt's recommendation, of applying soot to the diseased part of *apricots*, and observing its effects, it will readily occur that as soot, like charcoal, is a powerful antiseptic and a preventive of the ravages of insects, it might, when mixed with oil, and *rubbed* over a wound, prove also a preservative against putrefaction and the injuries of the weather.

I have long since adopted this application, and found it completely efficacious; a quantity may at all times be readily collected and mixed up, so as to be laid on, like thick paint, with a brush, or rubbed over with a bit of cloth; and as very large wounds will require some years to enable the young wood to close over them, such parts should be covered or painted a second or a third time, at different periods, from six to twelve months, as the rain would otherwise find its way into the little clefts, occasioned by the contraction of the drying wood; and if drying oil, such as linseed, be used, it will prove more lasting and perfect in its effects.

By these means, disease and rottenness will be prevented; the old wood will continue sound and hard, and the surface being preserved smooth, the new wood will form close upon the old wood, and consequently wounds thus treated will never prove so detrimental to timber as when they are left exposed.

It might be observed that the soot, thus applied, will ad-

here to the surface, and, in consequence, the new and old wood cannot unite or incorporate, "but must remain perfectly separate and distinct from each other, without union or adhesion;" this, no doubt, will be the case; and, according to Mr. Knight, this has been explained by Dr. Anderson, as all the effect he believed to be produced by Mr. Forsyth's composition, and all that he or Mr. Forsyth meant to assert it had produced.

There are, no doubt, instances within the scope of every one's observation, of tall, straight, healthy stems growing upon or from old wounded and hollow stumps, without the aid of art; but whenever it is desired to encourage and support the growth of trees in this manner, it is, as Mr. Forsyth observes, more effectually done by reducing all the branches to one, and from time to time removing all other shoots growing from the old trunk, and also all decayed or rotten wood, and applying the covering recommended to the exposed and wounded parts; this, by excluding the air and moisture, will prevent decay and the waste of sap by putrefaction, and the future growth of the tree will consequently be better sustained."

THE SEASON.

Mr. Fessenden,—I certainly should not select the present uncommon season, as a fit one, to suspend my annual account of the progress of vegetation. It is now fourteen years, since I first published such a register, and I have found that it has excited as much notice as a thermometrical journal. I will not say that any important results, any great aid to cultivation may be afforded by it,—neither have I ever yet seen any practical benefit, any essential aid to science from *thermometrical* registers; but they are both of them enter-

taining. When the thermometrical register shall enable us to calculate what weather we shall have in any given space of time in future, the *Journal of Flora*, (as Linnæus called it,) may enable us to know when to sow our seed with security, and how to time our horticultural labours. For myself, I have feeble hopes of any beneficial result, other than a very agreeable amusement.

The present season is one of the very few which transcend or surpass the ordinary limits, on the average of any ten years taken together. It has been said that it is earlier than any year since 1792. This is not strictly true, but it is true, that it has been and is very forward, and its forwardness may be traced clearly to the early and long continued covering of snow. It is a fact within my own knowledge, that plants left in a growing state, when the first snow fell, were found in an equally flourishing state, when the dissolution of the snow, some months afterwards, left them bare. Clover not six weeks old survived the winter, and was ready to start as the snow was dissolved.

REGISTER OF THE SEASONS.

Cherries began to open their flowers,

in 1813	-	-	May 10
1815	-	-	" 10
1816	-	-	" 6
1817	-	-	" 6
1818	-	-	" 13
1819	-	-	" 6
1820	-	-	" 2
1821	-	-	" 9
1822	-	-	" 1
1823	-	-	" 7
1824	-	-	" 1
1825	-	-	April 23
1826	-	-	May 4
1827	-	-	April 21

Thus it will be seen that the present season was, as it respects the opening of the cherry blossoms, two days earlier than in any year during the last fourteen,—and earlier than the average of the fourteen years, about fourteen days.

THE OPENING OF THE PEACH.

I shall take a smaller number of examples of the other plants, because one plant in effect shows correctly the true state of vegetation:

Peaches in	1815	began to open	May 10
"	1816	"	" 5
"	1825	"	April 25
"	1827	"	" 16

Apples opened their flowers,

in	1813	May 23
	1815	" 18
	1825 (*the earliest year before the present, for fourteen years*)	
Siberian crab apple began to flower		May 7
Ditto,	in 1827	" 4

Other early apples opened,

in	1825	May 8
in	1827	May 4

These are the general facts as to large plants not easily affected by casual causes. The present is the most early season known, as to such plants within the last fourteen. The same remark may be made as to herbaceous plants. *Asparagus* was cut in the same bed this year ten days earlier than in any year (except 1825) since the register was kept. It is equally true as to grass. It is from ten days to a fortnight more forward than usual. We have however had six days together so cold that asparagus did not grow one inch during the whole period. As yet, we have es-

caped frosts except *one severe* one. This does not appear to have affected any of the fruits. *Peaches* never promised better. *Pears* do not *generally* promise well. The *Apple* blow will be of course less than that of last year in those sorts of trees which flower biennially. Those which had full crops of Rhode Island greenings and Baldwins last year, will not have a single blossom this; for this reason we prefer the Spitzenburg, and other apples, which bear moderately every year.

These remarks apply only to my own garden.—No man can be accurate, as to the condition of his neighbours' fruits. Generally speaking, however, it may be presumed that the state of one garden will give a fair average of the whole.

A FARMER.

N. B. I have said, that apple trees which bear moderately every year, are preferable to those which bear *one* year very full, and the next year not one apple. Too little attention is paid to this difference by the farmer. The apples which bear constantly are the Newtown pippin, Prince's pippin, Esopus Spitzenburg, the Russeting, the Bell flower, &c.—*New-England Farmer.*

Roxbury, May 27, 1827.

[Since the foregoing statement of the season was published, the progress of vegetation has continued with the same proportionable advancement over ordinary years. Grass will be ready for the scythe at least seven days earlier than usual, that is, the poa pratensis, Dutch clover and May grass, are at this moment seven days more forward than usual.

The sweet scented vernal grass is nearly out of flower, and the May grass, or Aloepecurus pratensis, or Meadow Foxtail of the English, and also the Ribwort or field plain-

tain (a very common grass in many soils) are now in the fullest blow. I wish I could add, that the prospect for Peaches continued to be as good as when the above remarks were made. *Young* peach trees, with me, have undergone a very material change; the flower buds have nearly all fallen, in some instances all. The foliage has been sickly, and the ground is strewed with yellow leaves; this I attribute not to frost, but to long continued rains and cold easterly winds. The change did not take place until three weeks after the only frost we had, and every part of the flower and shoots continued during that time to flourish as well as ever. Frost does not turn the leaves yellow, and curl them up; its effects are seen the first day, if at all;—as soon indeed as the sun strikes upon them. Now whatever destroyed the foliage would destroy the germ; indeed the sickly state of the foliage would of itself prove fatal to the fruit in its embryo state. The severe frost with me was on the 28th of April, and my peaches went on to flourish till the 15th of May. This general fall of the first leaves, and in some cases destruction of the shoots themselves, was not owing to disease in the tree; mine have no worms; are not gummy, and have now shot anew with great vigour. Nor were the effects of the cold north-east storms and superabundance of rains confined to the peach; they have been nearly as fatal to the early blowing cherries, to the leaves of some pear trees, to asparagus while that weather lasted; and the same cause has wholly destroyed my crop of gooseberries. We ought not to complain however. The crops of grass will be abundant; potatoes look finely. Strawberries flourish in such weather, and will be very fine. Peaches (notwithstanding the young trees have suffered) will yield a great crop, and I feel persuaded will be more plenty than the cultivators will wish.

A FARMER.

[We are induced to republish the following extract from the American Farmer, not only because we know of no grass superior to the Meadow Foxtail, but on account of the very curious and interesting remark as to the comparative value of the first crop and *aftermath* of the Meadow Foxtail; it is stated that the value of the after crop of that grass is superior to the first crop as 4 to 3: and the superior productiveness or value of the after crop of the sweet scented vernal grass to its first crop as 9 to 8. This may account for a fact stated by us in a Review of Judge Buel's Essay on Grasses, published in our last number, viz.: the great productiveness of a meadow, in which the sweet scented vernal grass, and the Meadow Foxtail prevail.—The Meadow Foxtail has never been cultivated in our neighbourhood, yet it abounds in our meadows chiefly on the outskirts of wet lands; it delights in a soil moist, but not wet. I have a field now in sight, as I am writing, in which seven-eighths of the whole herbage is the May grass, or Meadow Foxtail. It is now in blossom, and will be cut in a week; it will yield two abundant crops afterwards. It would be well worth sowing in moist land not too wet; but how can we get the seeds?]

ON GRASSES AND OTHER PLANTS.

Extracts from G. Sinclair's Hortus Gramineus—with occasional notes and observations, by a Correspondent.

"ALOPECURUS *pratensis*. Meadow fox-tail grass.*

"*Specific Character*—Stem erect, smooth; spike somewhat panicled; calyx-glumes acute, hairy, combined at the base, shorter than the awn of the corolla. Sm. Engl. Fl. i. p. 79. Native of Britain and most parts of Europe, from Italy, through France, Germany, Holland, to Denmark, Norway, Sweden, and Russia.

"The proportional value of the grass of the latter-math to that at the time of flowering, is as 4 to 3; and the crop, at the time the seed is ripe, is to that of the latter-math as 9 to 8.

"Experiments clearly shew that there is nearly three-fourths of produce greater from a clayey loam than from a siliceous sandy soil, and that the grass from the latter soil is of comparatively less value, in the proportion of 3 to 2.

* This must be carefully distinguished from the plant usually called *Fox-tail grass*, in many parts of the United States. Our Fox-tail grass is the *Setaria glauca*, or *Panicum glaucum* of the botanists; and is rather a worthless, weed-like grass.

The culms produced on the sandy soil are deficient in number, and in every respect smaller than those from the clayey loam; which satisfactorily accounts for the difference in the quantity of nutritive matter afforded by equal quantities of the grass. It is not the strength and rankness of the grass that indicates the fitness of the soil for its growth, but the number and quality of the culms. The proportional value in which the grass of the latter-math exceeds that of the flowering crop, is as 4 to 3; a difference which appears extraordinary, when the quantity of flowering culms in the flowering crop is considered. In the *Anthoxanthum odoratum* the proportional difference is still greater, the latter-math being to the flowering crop in nutriment nearly as 9 to 4. In the *Poa trivialis* they are equal; but in all the later flowering grasses that have culms resembling those of the meadow fox-tail and sweet scented vernal, the greater proportional value is always, on the contrary, found in the grass of the flowering crop. Whatever the cause may be, it is evident that the loss sustained by taking these grasses at the time of flowering, is considerable. In ordinary cases this seldom happens in practice, because these grasses perfect their seed about the season when hay-harvest generally commences, unless where the pasture has been stocked till a late period in the spring, which cannot in this respect be productive of any ultimate advantage, but rather loss. This grass, under the best management, does not attain to its fullest productive powers from seed till four years; hence it is inferior to the cock's-foot grass for the purposes of alternate cropping, and to many other grasses besides. The herbage, however, contains more nutritive matter than that of the cock's-foot, though the weight of grass produced in one season is considerably less. It thrives well under irrigation, keeping possession of the crowns of the ridges: it is strictly permanent. Sheep are very fond of it: when combined with white clover only, the second season, on a sandy loam, it is sufficient for the support of five couple of ewes and lambs per acre. As it only thrives in

perfection on lands of an intermediate quality as to moisture and dryness, and also being somewhat longer in attaining to its full productive state than some other grasses, its merits have been misunderstood in many instances; and in others, as in the alternate husbandry, it has been by some persons set aside altogether. In many rich natural pastures it constitutes the principal grass. Though not so well adapted, therefore, for the alternate husbandry, it is one of the best grasses for permanent pasture, and should never form a less proportion than one-eighth of any mixture of different grasses prepared for that purpose: its merits demand this, whether with respect to early growth, produce, nutritive qualities, or permanency. It has been observed by the Rev. Mr. Swayne,* that nearly two-thirds of the seed is constantly destroyed by insects: according to my experiments this evil may be almost entirely obviated by suffering the first culms of the season to carry the seed. It flowers in April, May, and June, according as it may have been depastured earlier or later. Seed ripe in June and July, according to the season of flowering."

This grass is very little known in the United States; and, it is believed, has not yet been cultivated—though it may possibly be worthy of being introduced.

ON RAIL ROADS.

[We know of no topic, which can be more interesting to Farmers, at least, no one which well understood, *ought* to be more interesting to them than rail roads. We know of no publication in which information on this subject could be more properly conveyed or more usefully disseminated than in this journal. To the farmer it is a much more important question than in what manner he can increase his crops; he can scarcely hope to increase them more than 50 per cent.; but by cheapening and facilitating transport,

* See *Gramina Pascua*, by the Rev. George Swayne—a work which contains much valuable information on the subject of grasses.

the value of produce may in some instances be trebled, and in others, a value, a great value may be given to productions of art and nature, which without such facilities would be of no value whatever. We speak not from theory, but from the experience of Great Britain and of our own country. Coal mines in various parts of England were known to exist, but were not worth the expense of opening, until canals were introduced, and they are now the sources of immense individual and national wealth. The great canal of the Duke of Bridgwater was dug solely or principally to convey coals, and it made its enterprising projector or his representatives the richest subjects in Great Britain. The wheat of the Genesee Country was instantly raised by the Erie Canal 150 per cent. in value. To canals, however, in our country there are objections, which do not apply to rail roads. We have always doubted the expediency of a canal even to Connecticut river. It would require so great a number of locks and the consequent delay would be so great, and the expense of tolls and horses so heavy, that we doubt whether a canal would ever compete with the sloop navigation of the river. It is not our intention to enter into the argument in favor of rail roads. This has been very ably discussed by Nathan Hale, Esq., a gentleman, in all respects qualified for the investigation of such a question.

It is well known, that a project for a rail road much more extensive, and in many particulars far more difficult than the execution of one from Boston to the Hudson river has been formed in Baltimore; that an act of incorporation has been obtained; that the subscriptions far exceeded the amount required by the estimates; that they were made by men of great judgment, experience, and wealth; a highly respectable committee was appointed by the subscribers to consider and report on the subject, and they have submitted their report to the proprietors. This report has not been printed at large in this State, and at this moment while the question is under discussion, we think we cannot render a more acceptable service than to give the sketch of that

report as it appeared in the American Farmer, edited by J. S. Skinner, Esq., in Baltimore. It should, however, be kept in mind, that the surveys have not yet been made in Maryland, and of course the calculations cannot be rigorously exact.]

BALTIMORE AND OHIO RAIL-ROAD.

Historical sketch of the contemplated Rail-road from Baltimore to the Ohio.

Though we shall not have room to record *in extenso*, all the documents which will be put forth in the progress of the investigation which has been commenced in regard to this great project; we hold it to be our duty to give, from time to time, a sketch of the measures which may be taken in relation to it, to serve as a history of the undertaking, whether it be destined to succeed, or to miscarry. We commence accordingly, now, with the meeting of the citizens of Baltimore, on the 12th February, 1827; and we set apart a few columns for this sketch the more cheerfully, as we hope the facts and illustrations adduced by the committee, independently of their application to this particular work, will throw light upon the general subject that will be acceptable to the general reader, and useful to those who may be charged with enterprizes of a similar character, on whatever scale, in other parts of our widely extended country.

The meeting was convened to consider of the best means of "restoring to the city of Baltimore the portion of the western trade which has lately been diverted from it by the introduction of steam navigation, and by other causes."

William Patterson, Esq. one of our oldest merchants, of great probity and large fortune, and a whig of the revolution, was appointed chairman of the meeting, and David Winchester, Esq., secretary. Many documents and statements were produced at the meeting, to show the advantage of Rail-Roads over turnpike roads or canals, for transpor-

tation of heavy articles of carriage. These documents were referred by the meeting to a committee, with instructions to examine and report thereon to a subsequent meeting.

The committee so appointed consisted of—P. E. Thomas, Benjamin C. Howard, George Brown, Talbot Jones, Joseph W. Patterson, Evan Thomas, and John V. L. McMahon.

A resolution was then proposed by the meeting to contribute each ten dollars, to be placed at the disposal of the committee, who were invested with power to receive subscriptions from others. The meeting then adjourned to convene again on the 19th of February, 1827. A meeting was accordingly held pursuant to said adjournment, when the committee appointed at the previous meeting presented their Report. Of this Report, we must content ourselves with giving a brief outline. The prominent points are these:

That if Baltimore remain longer inactive, she must yield to the more efficient exertions of New-York and Philadelphia the little that remains to her of the western trade. In regard to the Susquehanna, the committee despatch it by remarking, that "The effort now making to connect the tide water of the Susquehanna by means of a canal navigation with the eastern extremity of the Pennsylvania State Canal, it is confidently hoped, by the friends of that measure, will secure to us the ascending and descending trade of this noble river, and perhaps will lead hereafter to a direct water communication with the great northern lakes, with whose tributary streams the Susquehanna interlocks. In completing this measure, we shall therefore do all that we are now called upon to execute in reference to the river Susquehanna."

After setting out the fact that Baltimore is nearer than New York by 200 miles, and nearer than Philadelphia by 100 miles, to the navigable waters of the west, the committee proceed to speak of the various modes which have been devised for intercommunication between distant points.

"When Turnpike roads," say they, "were first attempted

in England, they were almost universally opposed by the great body of the people, a few enterprising citizens however succeeded after a severe struggle, in constructing them. The amount of travelling was then so limited, that this means of transportation was found abundantly sufficient for all the exigencies of the then trade of that country; in a little time however, so great was the increase of commerce there, (and which increase in a great measure resulted from the advantages these roads afforded) that even the turnpikes in a short time were found insufficient to accommodate the growing trade of the country, and the substitution of canals in the place of roads was the consequence, in every situation where the construction of them was practicable.

"It was soon ascertained, that in proportion to the increased facilities afforded to trade by the canals in England, was the increase of trade itself, until even this means of communication was actually, in many of the more commercial parts of the country, found insufficient for the transportation required.

"Rail roads had, upon a limited scale, been used in several places in England and Wales for a number of years, and had, in every instance, been found fully to answer the purposes required, as far as the experiment had been made. The idea of applying them upon *a more extended* scale, appears, however, only recently to have been suggested in that country; but notwithstanding so little time has elapsed since the attempt was first made, yet we find that so decided have been their advantages over turnpike roads, and even over canals, that already 2000 miles of them are actually completed or in a train of rapid progress, in Great Britain, and that the experiment of their construction has not in one case failed, nor has there been one instance in which they have not fully answered the most sanguine expectations of their projectors. Indeed, so completely has this improvement succeeded in England, that it is the opinion of many judicious and practical men, there, that these roads

will, for heavy transportation, supersede canals as effectually as canals have superseded turnpike roads.

"We would just here remark, that the canal system has many advantages in England which it does not possess in this country.

"1st. The climate in England is so much milder in winter than ours, that their canals, even as far north as Liverpool, are seldom frozen, and then only about a week in any winter, whereas they would be often frozen up here for many weeks, and sometimes for several months.

"2dly. From that country having been long opened and cleared, the people there now know the minimum volume of their streams, and of course can calculate exactly how far they can depend upon these streams for a supply of water for their canals: whereas, with us it is known, that as the country is cleared, our streams are every year diminishing, and no one can now pretend to say to what point of declension they may yet go; but it has already been ascertained that 30 or 40 years back, many of them contained double the quantity of water they now do, in the latter part of summer.

"Thirdly, the climate of England being above the fiftieth degree of latitude, the people there have nothing to fear from the stagnation of water in their canals, whereas our climate is at least four months in the year a tropical one; and it is found by universal experience, that the exhalations from a common mill-race, renders the air unwholesome for a considerable distance on both sides of it. There is reason then to fear, that the same objection would apply to the navigating a canal below the fortieth degree of latitude, during the hot season of the year, that is found to exist against navigating the river Mississippi to New-Orleans. We say then, if England, with these decided advantages, which she undoubtedly possesses over us in favor of canal navigation, is about to supersede her canals by the construction of rail-roads, will it be wise in us to exhaust our

resources upon a system which is now about to be abandoned in a country where the experiment of the two plans has been fairly and fully made? There has yet in this country, been but one rail-road constructed and fully tested, and this is only about three miles long; it cost $11,000 per mile; but it is alleged that, with the experience now gained, a similar one could be constructed for about one third less. We here refer to the Quincy rail-road near Boston. It was erected as an experiment, and as far as it has been tried, has fully answered the expectations of the parties for whose use it was made; not having been the least injured by the severe frosts during the late winter.

"The stock of information upon the general subject of rail-roads, now in possession of this committee, is admitted not to be very extensive, but they have gleaned from the several publications and reports which they have examined upon this interesting subject, enough to leave no doubt upon their minds, that these roads are far better adapted to our situation and circumstances, than a canal across the mountains would be: they therefore recommend that measures be taken to construct a double rail-road between the city of Baltimore and some suitable point on the Ohio river, by the most eligible and direct route, and that a charter to incorporate a company to execute this work be obtained as early as possible; and in support of this opinion, they submit the following views and statements."

"Where an intermediate space between any two places, at a considerable distance apart, admits of being made so nearly horizontal as not to deviate more than 27 feet 6 inches a mile, locomotive engines may be employed [upon rail-ways,] to great advantage. Upon the Hetton road at Sunderland, 7½ miles in length, these engines draw 24 chalder wagons in a train, at the rate of four miles an hour. The weight, including the wagons, being equal to 90 tons." —*Strickland's Report, p.* 27.

"A high pressure locomotive engine, working with two

8-inch cylinders, and weighing five tons, has drawn on a level 27 wagons, weighing 94 tons, at the rate of four miles an hour; and when lightly laden, it will travel ten miles an hour. The cost of one of these engines is 400*l.* stg."—*Idem*, *p.* 29.

"The introduction of the locomotive engine, has *greatly changed the relative value of rail-ways and canals;* and where a communication is to be made between places of a commercial or manufacturing character, which maintain a constant intercourse, and where rapidity of transit becomes important, *it cannot be doubted that rail-ways will receive a preference in consequence of this very powerful auxiliary.*"—*Idem*, *p.* 31.

"A rail-way is equally suited to a mountainous or level country, and either horses or locomotive engines may be used upon it, (though not with advantage at the same time, from their difference of velocity,) the wagons being drawn along by the locomotive engine, which derives its motion from the contact and friction of the wheels against the rails, the wheels being attached directly to the steam engine. Where a rail-way is level, the power required to move the wagons is little more than the friction, which is found to amount to about a 200th part of the weight to be conveyed; or in other words, a power of one pound applied in the direction of the motion, will draw forward 200 lbs."

"A locomotive engine of ten horse power, will draw 120 tons, at the rate a draught horse travels; or 50 tons at the rate of six miles an hour. The engine requires the attendance of only a man and a boy, at a daily expense of five shillings. The coals consumed in ten hours would be from 20 to 30 cwt.; therefore the expense altogether would be less than 30 shillings per day—for which 50 tons may be conveyed 60 miles in ten hours, which is less than half a farthing a ton per mile."

"It is to be remarked that the rate of travelling may be increased to surpass that of mail coaches; and that the locomotive engine will as readily convey 25 tons (including

its own weight,) at the rate of twelve miles an hour, as double the weight in twice the time."

"Where ascents and descents were unavoidable, they were obviated by the introduction of inclined planes, up which the loaded wagons were drawn by stationary engines, or the loaded wagons descending, drew up the empty ones. Their present degree of perfection has thus been gradually attained, and four or five years' experience has fully proved their simplicity, cheapness, and regularity." *Idem, p.* 32.

"The cost of a double rail-way from Cromford to the Peak Forest Canal, in which there is a tunnel, four inclined planes, and including engines, warehouses, cost of lands, &c. &c. is estimated at £149,000. The distance, eleven miles. A canal to form the same connection, as estimated by Rennie, would cost £650,000. The construction of a double rail-way from Whaley Bridge, (a distance of thirty miles,) including bridges, tunnels, culverts, towpath, land purchased, warehouses to be erected, and all other expenses, was estimated to cost £4310 per mile."—*Idem*, p. 33.

"Upon a rail-road near Newcastle, a locomotive engine in fifty-four weeks, conveyed 53,823 carriages of coals, each weighing 9488 lbs., 2541 yards, and returned with the same number of empty carriages, each weighing 3472 lbs. This was in 54 successive weeks; and in that time, exclusive of Sundays, the engine, from want of goods to convey, was at least twenty days off work; so that in 304 days, the performance was 446,815 tons conveyed one mile, or 1470 tons, one mile each day; on a stage only 2541 yards. This engine had three feet wheels, which were calculated for a rate of about 4½ miles per hour; with *larger* wheels, and when the distance to be traversed is greater, the difference of effective speed between the horses and locomotive engines, will be correspondingly increased." —*Wood, on Rail-ways, p.* 231.

In addition to the foregoing evidence of the superior ad-

vantages of rail-ways over canals, furnished by Strickland and Wood, the committee submit the following extracts from a very valuable treatise, entitled "Observations on a General Iron Rail-way or Land Steam Conveyance," by Thomas Gray; and in proof of the high value in which this work is held in England, the committee need only remark, that in a very short time it has passed through five editions, from the last of which these extracts are made.

"The experience already had of our canal conveyance, cannot fail to convince every reader, after due observation, that the heavy expense attending the construction and repair of canal boats, with all their multifarious tackle, men's wages, horses and their keep, must render the transport much dearer than by a rail-way, which so peculiarly combines both economy of time and labor; and the few hands required to superintend a gang of wagons on the rail-way, compared with those employed in the conveyance of the same freight by a canal."—*Gray, p.* 36.

"The enormous expenses so peculiar to shipping, and the further detentions by canals, (such as the total stoppage to commerce when they are undergoing repair, and in time of floods, or frosts, or droughts,) greatly retard the intercourse of the country, and consequently enhance the transport of merchandise: on all these points I refer my readers to the merchants and traders, who cannot forbear their testimony in support of this statement. Rail-ways are free from all these objections, and the great speed with which journeys might be made, would enable coach and wagon proprietors to reduce the present rate of carriage one half." —*Gray, p.* 41.

"All counties, which from their distance and expense of carriage, are totally denied the use of coals, might, by means of the plan now under consideration, be regularly supplied with this necessary article of fuel, on terms nearly equal with those situated in the more immediate neighborhood of coal pits."—*Gray, p.* 46.

"The proprietors of the *few* canals which do answer, will have the greatest reason to complain; but they, in common with the rest of society, must of course submit to any superior method of improving the conveyance or transport of merchandise, just as the common coasting traders will to the established steam vessels. With respect to those canals which do not answer, and those that never can, the sooner they are abolished in toto, the better."—*Gray, p.* 66.

"The expense of forming rail-ways is not only far less than that of canals, but the former exhibit the peculiar advantage of a better conveyance than roads and canals conjointly afford at present."—*Gray, p.* 67.

"The mode of conveyance that most nearly assimilates to rail-ways, is canals; but to them, the agency of steam cannot be available, as they are limited to the size of their loads, and as regards utility, to the speed of conveyance; for to draw a load of forty or fifty tons with double the speed that is now done by one horse, could not be effected on a common canal by any power that can be applied.—*Jessop, in Gray, p.* 103.

"A rail-way can, according to circumstances, be made at from a half to a fourth of the expense of a canal, and convey goods more cheaply, which would render them lucrative when any other mode would be ruinous."—*Idem, in Gray, p.* 104.

"On the proposed rail-way, where the ascent from Cromford by four inclined planes is nearly 1000 feet, and the descent to the Peak Forest canal between 7 and 800 feet, by three others, the average cost of working each place will be about a halfpenny per ton. When these very moderate expenses of carriage are considered, it furnishes an additional argument in favor of the opinion I expressed in my former report, that a rail-way forming so important a connection between rich and populous districts, and with canals which yield an abundant revenue, cannot be a spe-

culation of hazard; but must be a secure and a lucrative mode of investing capital."—*Idem, in Gray, pp.* 107–8.

"Rail-ways have latterly been extensively constructed from the collieries in the neighborhood of Newcastle, and experience has confirmed the advantages above stated, and the simplicity attending them: they obviate many objections to canals, arising from the localities of the country. When great elevations have to be passed over, the lockage on canals is excessive, and the consequent supply of water expensive, and perhaps only to be obtained by interfering with the vested rights of mill owners."

"Rail-ways may be constructed at one-fifth part of the expense of canals; and as it has been shewn that they will convey as cheaply, where the prospect of remuneration to the adventurer in one case is doubtful, the lesser expense makes the other certain; and as few persons have the public spirit to embark in unprofitable speculations, the lesser cost of a rail-way may secure to a district the advantage of cheap conveyance of the first necessaries of life, as well as give value to its mines and produce, and to the public that of free communication with distant places, whilst benefit to the adventurers is not lost sight of. Canals take the richest land, and are circuitous by following the valleys, and the carriage from them is ascending. Rail-ways may pass along the tops and sides of hills from whence the carriage of coals and heavy goods will be conveyed into the neighborhood without the obstacles of hills, and their elevation admits of branches from them at little expense, wherever mines or a populous village make it desirable."—*Gray, p.* 180–181.

"Rail-roads, as hitherto worked by horses, possess very little, if any advantage, over canals; but rail-roads, worked by the locomotive steam engine, have so decided a superiority, both as regards time and expense, that there can be no question, but they will be generally adopted, wherever a new line of conveyance has become necessary, either

from an increased trade, or from the exorbitant demand of canal proprietors. By the locomotive engine, 50 tons of goods may be conveyed by a ten horse power engine, on a level road, at the rate of six miles an hour, and lighter weights at a proportionate increase of speed. Carriages for the conveyance of passengers, at the rate of 12 or 14 miles per hour. For canals, it is necessary to have a dead level; but not so for rail-roads: an engine will work goods over an elevation of one eighth of an inch to the yard. Where the ascent or descent is rapid, and cannot be counteracted by cuttings or embankments, recourse must be had to permanent engines and inclined planes, just as recourse is had to locks for canals; but here again the rail-road system has a great advantage—the inclined plane causes no delay, while locking creates a great deal."—*Gray, p.* 185–186.

"When the rail-way is once completed, the repairs would not be so heavy as on the common turnpike roads, owing to the very good and very substantial foundation which must be laid to begin with."—*Gray, p.* 4.

"The carriage of oysters renders them so excessively dear in towns remote from the metropolis, that in order to have one small barrel forwarded to any friends residing two hundred miles in the country, an additional charge of 50 per cent. or more, on the cost, is made for carriage; this evil would be obviated by the plan now submitted to the public, as proprietors of steam wagons and caravans would be able to deliver merchandise 2 or 300 miles (indeed any distance wherever the rail-way extends) within the time now required for coaches; and the great quantity taken with such ease and rapidity, would cause the carriage to be only one quarter of the present charge. As almost every one would gladly partake of oysters during the season, this general wish might be gratified by the great reduction in the price of carriage, and at the same time prove highly advantageous to the owners of oyster

beds. All perishable articles, such as fish, fruit, and provisions ofordinary and general consumption, require a speedy conveyance, otherwise they soon spoil from the heat occasioned by any quantity being packed together; therefore, the same vehicles which take the fish, as already mentioned, will afford every necessary means required, and cause a general and uniform supply of these articles of food."*—*Gray, p.* 30–31.

An abstract statement of the comparative difference between Horse and Mechanic Power.

The real number of wagon, coach, and post chaise horses, employed on our main turnpike roads, will, perhaps, be found to exceed 500,000; taking, however, this number for a calculation, and computing the value of each horse at *l.*20—the keep at *l.*20 each per annum; in the course of 12 years, allowing for the renewal of stock every four years, and the interest of capital, the consequent expense in this limited space of time, is - - -		*l.*173,500,000 0 0
The expenses of 10,000 steam engines, *l.*300 each in value, which would, on a rail-way, be more than equivalent to the horse power, above stated, amounts to	*l.*3,000,000 0 0	
Interest of this capital for 12 years,	1,800,000 0 0	

* Should the result here stated be realized in reference to the proposed rail-road from Baltimore to the Ohio river, an extensive market would at once be opened to the West, for fish and oysters, which must necessarily increase the value of our numerous fisheries and oyster beds, upon the shores of the Chesapeake Bay, to an enormous extent, besides sustaining an immense augmentation of the tonnage on this Bay and its tributary waters; thus opening to the people who reside upon these shores, or who hold property near to them, a new and highly lucrative source of wealth.

The fuel necessary to feed the steam engines, taken at 14*s.* per day for each engine, in 12 years amounts to	30,660,000 0 0	*l.*35,460,000 0 0
Difference in favour of the rail road system,		*l.*135,040,000 0 0

Gray, p. 67.

The Committee are much gratified to find themselves fully sustained in the opinion they have here endeavoured to enforce, of the superiority of a rail road over any other means of communication between the city of Baltimore and the Western states, by a very able report, lately made by a Committee of the Legislature of Massachusetts, who it appears had been appointed to ascertain the most eligible means of opening a direct inland communication between Boston and the Hudson river at Albany. The district of country between those places being in many respects similar to that between us and the Ohio river, renders this report the more interesting to us: The Committee therefore take leave to offer the following extracts from it:

"The Committee of the Massachusetts Legislature after reviewing the two means of intercommunication which have been most thought of, levels and rail-ways, and after a candid examination of the advantages, expense, &c. of each, come to the conclusion that the latter is preferable. The first cost of an iron rail-way, with two sets of tracks, is less than that of a canal, and the expense of repairs essentially less. The cost of the Quincy rail-way is stated at $11,052 98 a mile, which is believed to be a third more than a like undertaking would now cost."

This Committee then proceed to state that: "The nu-

merous rail-ways which have been for several years in successful operation in the hilly and mountainous districts of Wales, and in the north of England, prove their fitness to an uneven and undulating country.* They are not like canals, confined to a supply of water, and series of levels, but they admit of a variation like other roads. True, a level road, where the transportation is equal both ways is the best. But unless the deviation generally exceeds 27½ feet to a mile, it is, practicably considered, a level way. This deviation is nearly equal to three and a half locks on a mile of canal.

"The best material for constructing a rail-way, except iron, can be obtained on and near any route which may be selected. Our state abounds with immense quarries of granite, gneiss, and other hard rocks suitable for such a work; and in many places these may be had with little or no expense except the labour necessary for the preparation.

"Mines of iron are found in many parts of the state; and much of that important article can be had in this and the adjoining states. The prospect of such a demand for iron, as a resolve to construct a rail-way would produce, would naturally increase the manufacture, as well as the importation of that article.

"The rivers and other streams of water to be passed by the proposed rail road, are not such as to afford any serious difficulty. Bridges can be constructed, differing little in their form, except the rails, from those in common use.

"Your Committee are aware that the face of the coun-

* In support of this opinion, the Committee might further state, that the United States' Engineers in their report to Congress herein referred to, have, in consideration of the obvious difficulty of constructing a canal across the Alleghany mountains, suggested to the government, "the expediency of making the surveys and investigations necessary to ascertain as accurately as practicable, the comparative merits of a rail road and canal for the section of route from Cumberland to the mouth of Casselman's river."

Report U. States Engineers, p. 64.

try as above described, seems to present serious obstacles to the proposed design. But these obstacles lose much of their apparent magnitude when the *construction* of a rail-way, and the *principle and effects* of its operation are taken into view.

"The expense of a *double iron way* is variously estimated from 2000*l.* to 6000*l.* a mile. A rail-way from Liverpool to Manchester, recently granted by act of Parliament, is laid out upon the most extensive scale. It is sixty-six feet wide and *four sets* of tracks. The whole expense of the company, including land and warehouses at the two extremities, steam engines, wagons, and many other items, separate from the mere formation of the road is estimated at 12,000*l.* a mile; or for two sets of tracks 6,000*l.* When the expenses for land, storehouses in Manchester and Liverpool, expenses for steam engines, engine-houses, &c. are deducted, the cost for a mile will amount to 4,000*l.* A rail road from Newcastle to Carlisle, was estimated at 3,915*l.* a mile. A comparative estimate of various kinds of rail roads, amounting in all to upwards of five hundred miles, has been found to average about 4,000*l.* a mile, and with all the modern improvements, and extra expenses, to 5,000*l.* Many of these expenses are much beyond the necessary cost of constructing rail roads in this country, particularly for land, fences, and stone. There is already constructed in Great Britain near two thousand miles of rail-way, and many new routes are contemplated.

"Stone rail-ways are by far the most substantial and durable that have been yet invented. This is apparent from an examination of the rail-way at Quincy, where the iron bars are laid on long granite blocks.

"The expense of transportation on the rail-ways in England has been computed by Dr. Anderson, to be only one-tenth part of the amount it is upon the turnpike roads. And 'in South Wales,' it is stated in the Edinburgh Encyclopædia, 'a large uninhabited district of sterile mountains

may be said all at once, to have become the seat of populous towns and villages, by the introduction of the railway system.'"

The Committee will here close that part of their report which refers to the comparative advantages of canals and rail roads with the following extract, from an essay lately published in a London paper upon this subject:

From the [*London*] *John Bull.*

"*Steam.*—The strides which steam is making in the economy of the country, are more gigantic and surprising than those who are domesticated at a distance from its immediate operation imagine; but the capability of the locomotive engine to travel with ease and safety with a weight of ninety tons in its train, at the rate of eight miles an hour, having been proved by the opening of the Darlington and Stockton rail road, it becomes our duty to submit a more detailed statement of its powers and advantages, than we believe has yet appeared in print.

"The engine will travel over 25 miles 7 times a day, making 175 miles a day's work, with 90 tons, consuming 7 tons of small coals each day, or 42 tons per week, which at an average cost of 7*s.* will be 14*l.* 14*s.* One man and boy in constant attendance, supposing the 24 hours equal to three days, will be three men and three boys each day, which at 17*s.* 3*d.* will add 5*l.* 3*s.* 6*d.* and—making the total weekly expense 19*l.* 17*s.* 6*d.*—The engine will cost 600*l.*; 80 wagons 900*l.*—giving 1500*l.* for the entire set out.

"Now, 90 tons will load 6 boats; each of these boats will be a day in performing 20 miles; therefore 52 boats with 52 horses, 52 men and 52 boys, will be required to execute the transfer of 90 tons 175 miles in one day; each horse will cost weekly one guinea, each man a guinea, and boy 12*s.* forming a total weekly charge of 140*l.* 8*s.* [for expense of transportation by a canal,] in lieu of 19*l.* 17*s.* and

6d. [for the expense of the same transportation upon a rail road."]

The effect which the proposed rail-way would produce upon the value of real estate in our city, and upon the value of the lands through which the road would pass, will, perhaps, be sufficiently illustrated by the following estimates, extracted from the report of the Board of Engineers for Internal Improvement, concerning the proposed Chesapeake and Ohio Canal, laid before Congress, December 7th, 1826.

[Here follow extracts from the report of the United States Engineers, which has been published more at large, and may be found in No. 46, vol. 8, of the American Farmer.]

The very high and respectable authority from which we derive the foregoing estimate, must naturally inspire great confidence in its correctness. Assuming, therefore, that the advantages which might be expected from the Chesapeake and Ohio Canal, to the real estate which would participate in its benefits, are not over-rated, we will take the same data as precisely applicable to the proposed rail road, and the following results will appear:

Appreciation of real estate in the counties adjacent to the line of the road, as above estimated by the United States Board of Engineers, - - -	$12,000,000
In the Western States directly benefited by the road, - - -	17,280,000
Present estimated value of real estate in Baltimore, . - $20,000,000	
50 per cent. appreciation upon the value of this real estate in consideration of the increase of the trade of that city, from the opening of this new and cheap means of communication between it and the West, being the same ratio assumed by the United States Engineers as applicable to the property	

in the District of Columbia, the proposed terminating point of the Chesapeake and Ohio Canal, will be - - -	10,000,000
	$39,280,000

Thus exhibiting an actual appreciation of the value of real estate interested in the proposed rail-way, of at least 39 millions of dollars, whilst the cost of executing the work is only estimated at 5 millions of dollars, and whilst the investment of this 5 millions could not fail to yield a profit to the stockholders of more than 10 per cent. per annum.

With a view of enabling the public to form a correct idea of *the amount of trade* which would probably pass upon a well constructed double rail road communication between the tide waters of the Chesapeake Bay and the navigable rivers of the West, the Committee submit the following further extracts from the report of the United States Engineers.

The Committee do not doubt but that the estimated amount of tonnage would pass upon the proposed rail road. The district of country which would mainly depend upon this route for the conveyance of its surplus produce, it will be recollected already contains nearly two millions of inhabitants, that is to say about one-fifth of the whole population of the United States, whilst the population depending upon the New York canal is not estimated to be more than about one million; and the receipts from the latter are stated to be as follows:

Receipt for the year 1824,	$340,761 07
1825,	566,221 51
1826,	765,000 00

There are a great variety of articles the product of the country west of the Alleghany mountains, which are now of little value in those countries, on account of the heavy

expenses unavoidably incurred in the transportation of them, to a port whence they could be shipped to a foreign market. With the facilities afforded by this road many of these articles could not only bear a transportation to Baltimore, but while they would furnish a constant and an increasing supply of freight upon the proposed road, they would become a source of great wealth to the people of the West.

To illustrate the truth of this assertion, it will only be necessary to refer to the single article of bread stuffs. A barrel of flour for instance, which would now command five dollars in Baltimore, would not, as an article of export *to that market*, be worth at Wheeling, on the Ohio river, more than one dollar; the cost of its transportation from that place by the present means of conveyance being four dollars; whereas upon the proposed rail road, the whole expense of transportation from the Ohio river to Baltimore, being estimated to be only at the rate of ten dollars per ton, the cost of carriage upon a barrel of flour would then be only one dollar; thus at once would its value, as an article of export, be enhanced in Ohio from one dollar to four dollars per barrel.

The expense of conveying cotton upon the proposed rail road from the Ohio river to Baltimore, including all charges, may be estimated at one quarter of a cent per pound, certainly not more than half a cent a pound; and coal from the Alleghany mountains near to Cumberland, including its cost at the pits, could be delivered in Baltimore at from 11 to 12 cents per bushel. Let us then apply this calculation to the other numerous productions of the western states, and we shall at once be convinced, that there is no scale by which we could venture to calculate the ultimate extent of the trade, which would flow into the state of Maryland, upon the proposed rail road, should its results approach any thing near to our present expectations.

No part of the country, included in these estimates, lies

nearer, by water, to New Orleans than 1200 or 1500 miles, (and *that* it should be recollected is the only market that could compete with us for this trade,) whilst a large portion of those districts lie 2000 miles distant from that city. By the estimates here furnished, it is manifestly clear, that the produce from a large portion of those countries can be delivered at Baltimore, at a less expense of transportation than they possibly can be carried to New Orleans.

Admitting the cities of New Orleans and Baltimore to stand in the same relative condition, as regards their claims to this trade, Baltimore, to say the least, might be expected to hold its share; but we should not lose sight of the important fact, that the productions of these extensive regions; excepting only cotton and tobacco, being principally bread stuffs, provisions and other perishable articles cannot be exposed to the deleterious effects of the climate of New Orleans, without the hazard of great injury; hence we find that considerable portions of the flour and provisions which go by the way of the Mississippi, are often so much damaged, as to be rendered unfit for exportation to a foreign market. Many valuable lives are also annually sacrificed to the climate, in the prosecution of the trade upon the Mississippi. What then has Baltimore to fear from New Orleans, in a conflict on equal terms for their trade?

To convince any one that there is no probability that the trade here estimated will be likely hereafter to decline, it will only be necessary to observe, that the population, upon which the calculations are founded, is rapidly increasing every year, and that it must for several succeeding generations, still continue to increase. The country around the Chesapeake Bay was first settled by Europeans, about the year 1632, and in the year 1800 the white population had barely reached as far west as the Ohio river; that is to say, in 160 years it had advanced westward about 400 miles, or at the rate of two and a half miles per year. There is now a dense population ex-

tending as far west as the junction of the Osage river with the Missouri; which is about nine hundred miles west of the Ohio river at Wheeling; of course the white population has, within the last thirty years, travelled that distance, or more than thirty miles each year, and is at this time advancing with as great, if not greater impetus, than at any former period: and according to all probability, if not checked by some unforseen circumstances, it will, within the next thirty years reach the Rocky mountains, or even to the Pacific ocean. We have therefore, no reason to look for any falling off in this trade, but on the contrary, for an increase of it, to an extent of which no estimate could now be formed.

In conclusion, the Committee beg leave to refer to the annexed tables, numbered from 1 to 7 in which they have arranged, under a condensed form, some of the more important facts and statements embraced in this report. The Committee have also in these tables contrasted the advantages, which, in their opinion, would be likely to accrue to the city of Baltimore, from connecting her trade with the western states, by intersecting the contemplated Chesapeake and Ohio canal within the District of Columbia, and by A DIRECT RAIL ROAD FROM BALTIMORE TO SOME ELIGIBLE POINT ON THE OHIO RIVER.

All which is respectfully submitted.

PHILIP E. THOMAS,
Chairman of the Committee.

[We have here given nearly the whole of the report of the Committee, the facts and the reasoning appearing to be of a general character, and likely to prove instructive to those who wish to understand the general subject.

The report was unanimously accepted by the meeting—a resolution was then adopted to appoint a Committee of twenty-five citizens on its behalf, to prefer an application

to the Legislature for an act to incorporate a joint stock company, under the title of "THE BALTIMORE AND OHIO RAIL-WAY COMPANY," and the following persons were accordingly designated for that purpose.

Charles Carroll of Carrollton, William Patterson, Isaac M'Kim, Robert Oliver, Charles Ridgely of Hampton, Thomas Tenant, Alexander Brown, John M'Kim, Jr., Talbot Jones, James Wilson, Thomas Ellicott, George Hoffman, William Steuart, Philip E. Thomas, William Lorman, George Warner, Benj. C. Howard, Solomon Etting, W. W. Taylor, Alexander Fridge, James L. Hawkins, John B. Morris, Luke Tiernan, Alexander M'Donald, Solomon Birckhead.]

TABLE, No. 1.

Estimated difference in the distance between connecting the city of Baltimore with the western trade, by a continuous canal, intersecting the eastern termination of the proposed "Chesapeake and Ohio canal," within the District of Columbia, and of connecting Baltimore with this trade by a rail-way, direct from that city to some suitable point on the Ohio river.

The United States Engineers report the length of the "Chesapeake and Ohio canal," from the city of Washington to Pittsburg, on the Ohio river to be	341½ miles
Estimated length of a canal from Baltimore, to intersect the "Chesapeake and Ohio canal," at Washington,	48½ miles
Whole distance of a canal by this route, from Baltimore to Pittsburg,	390 miles
Estimated distance of a rail-road, from the city of Baltimore to Wheeling, or some other suitable point on the Ohio river,	250 miles
Distance saved by a rail-road,	140 miles

TABLE, No. 2.

Comparative cost of constructing a canal communication between the city of Baltimore and the Ohio river, by the proposed route of the "Chesapeake and Ohio canal," and by the proposed *direct* rail-road communication between Baltimore and that river.

The United States Engineers estimate the cost of the proposed canal from Washington to Pittsburg, to be ($22,375,427,) twenty-two millions, three hundred and seventy-five thousand, four hundred and twenty-seven dollars; but we will suppose it could be made for one half of this sum, or	$11,000,000 00
To which should be added the cost of constructing a continuous canal from the city of Baltimore to the eastern termination of the "Chesapeake and Ohio canal," at Washington, that being the only point at which we can intersect it,	1,000,000 00
	$12,000,000 00
The highest estimate cost of a rail road from Baltimore to the Ohio river, calculating the same to cost $20,000 per mile, (and this is believed to be a very high estimate,) would be	$5,000,000 00
Amount of capital saved in favour of a rail-road,	$7,000,000 00

TABLE, No. 3.

Estimated difference of expense on transportation for tolls only, by the proposed canals from Baltimore through the District of Columbia to Pittsburg, and by a direct rail road route from Baltimore to some point on the Ohio river.

The United States Engineers estimate the cost of transportation by the proposed Chesapeake

and Ohio canal, at the rate of 1½ cents for each ton per mile—taking the whole distance then from Baltimore to Pittsburg, as is shewn in Table, No. 1, to be 390 miles; the tolls for conveying a ton of freight from Baltimore, the whole distance along this canal would be	$5 85
Tolls for carrying the same freight along the proposed rail road at the same rate per mile, the distance being 250 miles, would be	3 75
Amount of freight saved per ton in favour of a rail road, at the same charge for tolls, would be	$2 10
In order however to show the actual saving by the rail road, it is necessary to remark, that the proposed charge along it, is not 1½ cents per ton each mile, as charged on the canal, but 1 cent per ton each mile, and this will give a further advantage in favour of the road on each ton of	1 25
Making the difference per ton in favour of the rail road, to be	$3 35

TABLE, No. 4.

Estimate of the income which the proposed rail-road from Baltimore to some point on the Ohio river, would annually yield, computing the freight which would pass upon this road to be only 150,000 tons from west to east, and the amount that would pass from east to west, to be 50,000 tons.

150,000 tons from west to east at 1 cent per ton per mile, being the New York canal price,	$375,000 00
50,000 tons from east to west at 3 cents per ton per mile, being the New York canal price,	375,000 00
Total amount of tolls,	$750,000 00

TABLE, No. 5.

Estimate of profits to the holders of stock in the proposed Baltimore and Ohio rail-road.

Expense of constructing the proposed road, being estimated at $20,000 per mile, and the distance being assumed to be 250 miles, would make the whole cost five millions of dollars, $5,000,000 00

Six per cent. interest on the above capital invested, would be $300,000 00

Income from tolls as is shewn by Table, No. 4, 750,000 00

Which leaves $450,000 for repairs, contingent expenses, and surplus dividends, $450,000 00

TABLE, No. 6.

Estimated difference of the time it would take for conveying freight from Baltimore to Pittsburg, by the proposed Chesapeake and Ohio canal, between those places, (through the District of Columbia,) and by a direct rail road from Baltimore to some point on the Ohio river.

The United States Engineers, (page 38,) estimate the time it will take to travel with loaded boats from Washington to Pittsburg, to be 188 hours

The distance between these points being 341 miles, we have only to add the same rate of travelling for the additional distance from Baltimore to Washington, say 48½ miles, and the additional time will be 26½ hours

Time employed in passing on the proposed canals, from Baltimore to Pittsburg, 214½ hours

There is abundant evidence to prove, from authentic documents published, that the

rate of travelling upon rail roads, with the locomotive engines, in England, (and this has been sufficiently shewn to be the cheapest means,) is, with heavy loaded wagons, from 4 miles to 6 miles, and even 8 miles per hour; assuming however the slowest rate, and the passage will be made from Baltimore to the Ohio river, say 250 miles, at the rate of 4 miles per hour, is,	62½ hours
Time saved in favour of the rail road, each trip,	152 hours

TABLE, No. 7.

Synopsis of the six preceding Tables.

TABLE 1.

Distance between Baltimore and Pittsburg, by the proposed Chesapeake and Ohio canal,	390 miles
Distance from Baltimore to the Ohio river, by the proposed rail road,	250
Distance saved by the road,	140 miles

TABLE 2.

Smallest estimated cost of the proposed Chesapeake and Ohio canal,	$12,000,000
Highest estimated cost of the contemplated rail road,	5,000,000
Amount of capital saved in favour of the road,	$7,000,000

TABLE 3.

Cost of transporting, for tolls only, on a ton of freight from Pittsburg to Baltimore, upon the Chesapeake and Ohio canal,	$5 85
Cost of same transportation by the proposed rail road,	2 50
Tolls saved on each ton, by the rail road,	$3 35

TABLES 4 & 5.

Annual income from tolls upon the proposed rail road,	$750,000
Six per cent. interest on the capital invested,	300,000
Annual surplus profits to be appropriated for repairs and extra dividends,	$450,000

TABLE 6.

Time employed in passing a boat from Baltimore to Pittsburg, by the Chesapeake and Ohio canal,	214½ hours
Time to pass from Baltimore to the Ohio river, upon the proposed rail road,	62½ hours
Time saved by the road, each trip,	152 hours

THE DISEASE IN PEAR TREES.

THIS very alarming complaint has appeared to increase within the last two years, and since the publication of our last number there is much additional evidence, tending to confirm the opinions which we have uniformly expressed, that it is the work of insects; of the larva of some wood eating insect. Our opinions were founded on the following facts, that the disease made its appearance in the healthiest trees; that it appeared in trees growing in all sorts of soils; in lands manured highly, and in lands, which had never been manured; that there were no preceding symptoms of disease, and no succeeding ones after the extirpation of the diseased parts, except with the same appearances; in other words, the rest of the trees continued to enjoy good health, but above all, that the disease always appears at the same season of the year, which corresponds with the period of the appearance of the insect.

There never would have been any doubt on the subject if persons had detected the depredator, but it had never been seen except by Professor Peck, and Mr. Lowell. The former saw the insect in the branch, and found it to be a wood eating insect of a genus well known as a destructive one.

This spring, in April, Benjamin Gorham, Esq. brought to us a twig of a decayed pear branch, in which was the larva of a wood eating insect alive; it is now before us together with the twig. The larva is white, and about half an inch long; the heart of the twig is wholly eaten out, and some of the albumum. Its ravages were quite great enough to destroy all the twigs above it and some distance below. We must acknowledge that we have some doubts whether this is the larva of the Scolytus Pyri, described by Mr. Peck; it seems to us to be too large for it. We have seen still more convincing proofs that the disease in the pear tree is the work of an insect. Last year several fine pear trees, in the garden of E. Hersey Derby, Esq. in Salem, were attacked with precisely the same symptoms which have been described by others, and long known under the name of fire blight. The limbs, and leaves, and fruit, became black and hard in the space of a few days. On a thorough examination of the diseased limbs, there were the most marked proofs of the ravages of insects. Mr. Derby brought several pieces of the wood to the meeting of the Trustees of the Massachusetts Society, for promoting Agriculture, and the same were examined; no doubt could be entertained that these limbs at least had been destroyed by insects. Mr. Derby himself said he had no doubt of it. Whether the insect which destroyed Mr. Derby's trees was the Scolytus, or another undiscovered enemy, we cannot say. The injury appeared to be more extensive than we should apprehend that which the Scolytus could make. Time, and careful attention will explain this mysterious affection of the pear tree.

ORCHARD GRASS.

As we gave great praise to this grass in our last number, and have spoken favorably of it in the present one, we should be guilty of unfairness should we fail to publish the following letter from a correspondent of the American Farmer, who appears to be experimentally acquainted with it, and who writes in a fair and impartial manner on the subject. Our own knowledge has been derived from John Prince, Esq., and we have always understood from him, that it was as valuable for hay as it most unquestionably is for soiling and pasture.

Union-Town, May 19, 1827.

Sir,—The introduction and culture of the grasses has been (where they have been properly attended to,) of immense benefit to the agriculturist in this country, as well as elsewhere, in the general improvement of his farm and immediate profits of his stock. So far as we have gone into the system, and varied it to suit the peculiarities of our climate, so far we have done well. But, in general, we have been too much disposed to take up the views and practices as they are handed to us from the other side of the Atlantic. It is certainly right that we try whatever their system recommends to us, but it is not right that we be satisfied *only* to try it in *their* way. Here, indeed, is our error. We must do exactly as they have done; and if the result is bad, the course is condemned and abandoned as one that is ruinous, or comparatively bad. And all this, perhaps, for the want of a little attention and management in matters, so as to suit it to the peculiarities of our climate, and the general principles by which we regulate our farms.

These reflections have grown out of some observations made by the writer of this article (among other matters,) on the culture and application of the orchard-grass, (*Dactylis glomerata.*) Great efforts were made to introduce it into use as a grass for hay, and so successful was Mr.

P——, in the introduction of it into the neighborhood of Philadelphia, that it has nearly driven that best of all grasses for hay, (timothy,) out of their meadows. But with us, it has not been so. The rage is over. It was found, as a hay-grass, to fall very far below the expectations excited by the extraordinary representations of its friends. The grass, when made into hay, was found to be light and weak, when compared with timothy, and by no means proper to be substituted for that grass in our meadows, and therefore to be abandoned altogether.

Now, in our opinion, the whole of this is wrong. It was wrong in the friends of orchard grass to have made it every thing, and above every thing of its kind; and it was equally wrong in him who tried it to have been discouraged when he found it would not answer for hay. He should have set his head to work, and his hands too, to know if it could not be used to more or better advantage in some other way; and whether it might not be a useful auxiliary in grazing or soiling. Our own observations and experience have led us to believe that it might be introduced in this way to great advantage. I will here throw together some of its valuable properties as a grass for that purpose.

It is an early grass. In general it will afford a sufficient growth of vegetation to *turn on* by the middle of April. It is rapid in its growth. No grass that we have can exceed it in putting forth, after it has been eaten off. It is abundant in foliage. The flowering stems are few, comparatively, and by proper management in eating it off, the whole may be consumed. In times of excessive drought, it will be refreshed and grow vigorously from showers that would make no impression on the clover crop. Its roots, being near the surface, immediately drink in the refreshing shower as soon as it touches the earth; while the tap root of the clover, waiting for the earth to become saturated, is disappointed by the exhalations of the superficial moisture, and again droops its half withered leaf. The fibrous lateral roots of the orchard grass, in conjunction with the circumstance of its not forming into a compact sod, but each tuft being separate from the others, gives us a high opinion of

its adaptation to our climate. In this respect it has the same advantage over clover that corn has over root crops. However, we are not at all disposed to think that it ought to supersede the culture of clover. For the improvement of land, no grass has yet been found to equal clover; in this respect it stands first. What we have stated, is only to show that orchard grass would be a valuable *auxiliary* to the grazier, and should cover a part of his grazing ground. Every man must know that has fattened cattle on grass, how important it is to get them out early, while the weather is comparatively cool, and before the flies begin to worry them, so that they can neither eat nor rest in the day time. And who does not know the importance of meadow pasture, natural and artificial, of the spire grass kind, to finish the fattening in the closing of the season. After harvest, clover is generally good for nothing to fatten stock: for if it be a wet season, they *slabber* all their substance away; and if dry, which is mostly the case, there is nothing to eat. Here, then, a grass is offered to us that supplies the defects of clover, and will answer all the purposes of meadow for late pasture. Should such a grass be entirely excluded from our system? Or should we not rather use it to promote our prosperity in the way it offers, and which is most suitable to its nature? Z.

POTATOES.

We have, at various times, said much about the importance of attending more than we have ever yet done to the qualities of our potatoes as food; to their fitness for the table. We may be said to eat the worst potatoes in Massachusetts [not Maine where they have the best] of any State which pretends to raise them.

The old red Cranberry potato was a good one, and was thought to be extinct. Last year we met with them again very large and fair, but their goodness was gone. The history given to us of them was, that when they had nearly run out here, they were sent to the eastern part of Maine, where they revived and flourished, and were sent back

again to Boston. We bought a bushel or two, and planted them; they produced miserably, and were utterly worthless. We consider them as run out.

The Chenango potato, a Pennsylvania variety, we earnestly recommend as valuable for the table. It is remarkably early; very fair sized potatoes can be had from them in sixty days.

We had till this year supposed that their great excellence consisted in their being fine in summer and fall. We can now add that they continued fine till the 20th of May, and are now, on the 6th of June, better than any we have.

We have spoken highly of the Foxite potato, which is the great favorite in Pennsylvania, where it is preferred to the Chenango. It is a late potato, and not so showy as the Chenango. We had supposed that the Foxite was a variety produced in Pennsylvania, but we find them claimed as a New Jersey production by Mr. Buck, of Bridgeton, New Jersey. In a letter to the Editor of the American Farmer, he says, " with respect to the Foxite potato, I can truly say that they deserve all the commendations you have heard of them; they are certainly the finest potato cultivated in this country, remarkably white and mealy; and to use the expression of a gentleman with whom I was conversing on the subject and who has raised them for some years, '*they are* as much *superior* to *other* potatoes as the best superfine wheat flour is to common rye flour;' the only objection to them is, that they are poor bearers, and yield so badly as to discourage their cultivation. We grow another potato here called the Mercer potato, which is next in repute for the table and yields bountifully."

So far Mr. Buck's authority, which we can confirm from experience in all points, except that we have found it a very fair bearer. But until we can come to the European rule, which is to select the best eating potato for the table, and resting contented with small crops, we shall never have good ones on our tables. Every good variety of potato in France, Great Britain, and America, are small bearers compared with the coarser, or what we may call the cattle

sorts. The mangel wurtzel beet is a much greater bearer than the blood red, yet who would put the mangel wurtzel on the table? We can furnish those who may be disposed next year or the present to try the Foxite or Chenango with seed potatoes. There is a celebrated potato in Rhode Island called the Elam, which we have now under trial here.

ANNUAL CATTLE SHOW.

The Trustees of the Massachusetts Society for the promotion of Agriculture, encouraged by the patronage of the Legislature of this State, intend to offer in premiums, not only the sum granted by the Government for that purpose, but also the whole amount of the income of their own funds. They therefore announce to the public their intention to have a Cattle Show and exhibition of Manufactures, &c. at Brighton, on Wednesday the 17th of October 1827—☞The whole business to be transacted in one day instead of two as heretofore. The following premiums are offered.

FOR STOCK.

For the best Bull, raised in Massachusetts, above one year old - - - - - $30
For the next best, do. do. - - - 20
For the next best, do. do. - - - 10
For the best Bull Calf, from five to twelve months old 15
For the next best, do. do. - - - 10
For the next best, do. do. - - - 5
For the best Cow, not less than three years old - 30
For the next best, do. do. - - - 20
For the next best, do. do. - - - 15
For the best Heifer (having had a calf,) - - 15
For the next best, do. do. - - - 10
For the best Heifer, (not having had a calf,) - 12
For the next best, do. do. - - - 10
For the next best, do. do. - - - 8
For the next best, do. do. - - - 6
For the best Ox, fitted for slaughter, regard to be had to, and a particular statement to be given of, the mode and expense of fatting, - - - 25
For the next best, do. do. - - - 20

For the next best, do. do. - - - 10
For the best pair of Working Oxen - - 25
For the next best, do. do. - - - 20
For the next best, do. do. - - - 15
For the next best, do. do. - - - 12
For the next best, do. do. - - - 8

[No oxen will be admitted to trial as *working oxen* under *four* years old.]

For the best Merino Ram - - - 15
For the next best, do. do. - - - 10
For the best Merino Ewes, not less than five in number 20
For the next best, do. do. do. - - - 10
For the best Boar, not exceeding two years old, to be kept at least one year for breeding, - - 12
For the next best, do. do. - - - 8
For the next best, do. do. - - - 5
For the best Sow, to be kept at least one year for breeding, - - - - - 12
For the next best, do. - - - - 8
For the next best, do. - - - - 5
For the best Pigs, not less than two in number, nor less than four months old, nor more than eight - 10
For the next best, do. - - - - 5

None of the above animals will be entitled to premiums, unless they are *wholly bred* in the state of Massachusetts.

Any of the above stock, when raised and still owned at the time of the exhibition by the person who raised them, will entitle the claimant to an allowance of ten per cent. in addition. But sheep, to be entitled to any of the above premiums, must be raised by the person entering them.

NEW PREMIUMS FOR SHEEP.

For the best Dishley or New Leicester Ram - $15
For the best, do. do. Ewe - - - 15
For the best South Down Ram - - - 15
For the best, do. Ewe - - - - 15

The above four premiums will be awarded on sheep either imported or raised in the state.

The persons claiming these premiums to engage to keep the imported animals within the state.

No animal, for which to any owner one premium shall have been awarded, shall be considered a subject for any future premium of the Society, except it be for an entirely distinct premium, and for qualities different from those for which the former premium was awarded.—*Any animal which shall have obtained a premium as a Milch Heifer shall not afterwards be entered for premium as a Milch Cow.*

FOR GRAIN AND VEGETABLE CROPS.

To the person who shall raise the greatest quantity of Indian Corn on an acre, not less than one hundred bushels - - - - - - $20

To the person who shall raise the greatest quantity of vegetables, (grain, peas and beans excepted,) for winter consumption, of the stock of his own farm, and not for sale, in proportion to the size of the farm and stock kept, having regard to the respective value of said vegetables as food, stating the expense of raising the same, and the best mode of preserving the same through the winter - - - - - 30

To the person who shall raise the greatest quantity of Winter Wheat on an acre, not less than thirty bushels 20

To the person who shall raise the greatest quantity of Spring Wheat on an acre, not less than thirty bushels 20

To the person who shall raise the greatest quantity of Barley on an acre, not less than forty-five bushels 20

To the person who shall raise the greatest quantity of Rye on an acre, not less than thirty bushels - 20

To the person who shall raise the greatest crop of Millet on an acre, cut and cured for hay, not less than three tons, the claimant giving evidence of the time of sowing, the quantity of seed sown, and the quantity of hay produced - - - - - 20

To the person who shall raise the greatest quantity of Carrots on an acre, not less than six hundred bushels 20

To the person who shall raise the greatest quantity of Potatoes on an acre, not less than five hundred bushels 20

To the person who shall raise the greatest quantity of common Beets on an acre, not less than six hundred bushels - - - - - - 20

To the person who shall raise the greatest quantity of Sugar Beets on an acre, not less than six hundred bushels 20

To the person who shall raise the greatest quantity of Parsnips on an acre, not less than four hundred bushels 20

To the person who shall raise the greatest quantity of Mangel Wurtzel on an acre, not less than six hundred bushels - - - - - 20

To the person who shall raise the greatest quantity of Ruta Baga on an acre, not less than six hundred bushels 20

To the person who shall raise the greatest quantity of Turnips on an acre, not less than six hundred bushels 20

To the person who shall raise the greatest quantity of Onions on an acre, not less than six hundred bushels 20

To the person who shall raise the greatest quantity of Cabbages on an acre, not less than twenty-five tons' weight, free from earth when weighed - 20

To the person who shall raise the greatest quantity of dry Peas on an acre, not less than thirty bushels 20

To the person who shall raise the greatest quantity of dry Beans on an acre, not less than thirty bushels 20

To the person who shall give proof of having produced the largest quantity of dressed Flax, raised on half an acre, and not less than two hundred and fifty pounds 20

To entitle himself to either of the premiums for Grain or Vegetable crops, the person claiming must cultivate a tract of at least one acre in one piece, with the plant or production for which he claims a premium, and must state in writing, under oath of himself, and one other person, (accompanied by a certificate of the measurement of the land by some sworn surveyor,) the following particulars:

1. The state and quality of the land in the spring of 1827.

2. The product and general state of cultivation and quantity of manure employed on it the year preceding.

3. The quantity of manure used the present season.

4. The quantity of seed used, and if Potatoes, the sort.

5. The time and manner of sowing, weeding, and harvesting the crop, and the amount of the product, ascertained by actual measurement, after the whole produce, for which

a premium is claimed, is harvested, and the entire expense of cultivation.

6. In regard to Indian Corn, the entire crop of the acre offered for premium, if shelled, must be measured between the 15th November and 1st December. If not shelled, the whole must be weighed within the same dates, and the trustees have determined to consider *seventy-five pounds of corn and cob* as equivalent to one bushel of shelled corn.

And in relation to all vegetables, (except Potatoes, Onions, and common Turnips,) at least *forty* bushels must be weighed, and *fifty-six pounds* will be considered as equal to one bushel, free from dirt.

AGRICULTURAL EXPERIMENTS.

For a mode of extirpating the worm that attacks the Locust Tree, which shall appear to the satisfaction of the Trustees to be effectual - - - $50

For a mode, hitherto unknown, to extirpate the *Borer* that attacks the Apple Tree, which shall appear to the satisfaction of the Trustees to be effectual and cheaper than any mode now in use - - 50

To the person who shall give satisfactory evidence on "Soiling Cattle," not less than six in number, and through the whole season, together with a particular account of the food given, and how cultivated 30

To the person who shall make the experiment of turning in Green Crops as a manure, on a tract not less than one acre, and prove its utility and cheapness, giving a particular account of the process and its result - - - - - - 20

To the person who shall prove to the satisfaction of the Trustees, that his mode of rearing, feeding, and fattening Neat Cattle is best - - - 20

To the person who shall prove to the satisfaction of the Trustees, the utility and comparative value of the Cobs of Indian Corn, when used with or without the grain itself, ground or broken - - 20

The claim under the two last heads, together with the

evidences of the actual product, must be delivered, free of expense, to Benjamin Guild, Esq. in Boston, Assistant Recording Secretary of this Society, on or before the first day of December next—the Trustees not intending to decide upon claims under the head of Agricultural Experiments, until their meeting in December.

BUTTER, CHEESE, HONEY, CIDER, CURRANT WINE.

To the person who shall take up in the season, on his own farm, the greatest quantity of good Honey, and shall at the same time exhibit superior skill in the management of Bees. [If there be any thing supposed to be new in the management, the same to be communicated in writing.] - - - $10

For the best Cheese *not less* than one year old, and not less in quantity than one hundred pounds - 10

For the next best, do. do. - - - 5

For the next best Cheese *less* than one year old - 10

For the next best, do. do. - - - 5

For the best Butter, not less than fifty pounds - 15

For the next best, do. do. - - - 10

For the next best, do. do. - - - 7

For the next best, do. do. - - - 5

For the greatest quantity of Butter and Cheese, made between the 15th of May, and the 1st of October, from not less than four cows, the quantity of butter and cheese, and the number of cows, to be taken into consideration, and specimens to be exhibited at the Show, of not less than twenty pounds of each, and the mode of feeding, if any thing besides pasture was used 20

For the best specimen of Cider, not less than one barrel, made in 1826, manufactured by the person who shall exhibit the same, and from apples grown on his own farm - - - - - 15

For the second best barrel - - - 10

The person obtaining the first premium shall be entitled to a further sum of $5, as a compensation for the premium barrel of Cider, which will be retained and used at the Show Dinner, in order that he may have the credit of it.

[These premiums will be continued in future years. Persons claiming them must state, in writing, their process of making and managing their cider, and the kind of apples used.]

For the best specimen of Currant Wine, not less than one gallon, exhibited by any person who shall have made not less than 30 gallons, in the same season in which that which shall be exhibited was made, (a statement to be given, in writing, of the process of making the same,) - - - - - $10

For the next best, do. - - - - 5

FOR INVENTIONS.

To the person who shall use the Drill Plough or Machine, and apply it most successfully to the cultivation of any small grains or seeds, on a scale of not less than one acre - - - - $20

To the person who shall invent the best Machine for pulverising and grinding Plaster to the fineness of twenty-five bushels per ton, and which shall require no more power than a pair of oxen or a horse, to turn out two tons per day, and so portable that it can be moved from one farm to another without inconvenience - - - - - - 30

To the person who shall produce at the Show, any other Agricultural Implement, of his own invention, which shall, in the opinion of the Trustees, deserve a reward, a premium not exceeding *twenty dollars*, according to the value of the article exhibited.

In all cases proofs must be given of the work done by the Machine, before it is exhibited; and of its having been used and approved by some practical farmer.

Persons who have taken out patents for their inventions are not thereby excluded from claiming any of the above premiums.

No claimant will be entitled to a premium, unless in the opinion of the Committee, the machine or implement presented by him shall be superior to any designed for the same use, which shall have heretofore gained a premium.

FOR RAISING TREES AND HEDGES.

To the person who shall, on or before the 1st day of December, 1829, produce proofs of having raised the greatest amount in value of Mulberry Plants, either in standards, dwarfs or in hedges, for the purpose of raising the Silk Worm, and shall exhibit not less than *five pounds* of unmanufactured or raw silk of his own production - - - $100

For the best plantation of White Oak Trees, not less than one acre, nor fewer than one thousand trees per acre, to be raised from the acorn, and which trees shall be in the best thriving state on the 1st of September 1827 - - - - - 100

For the best plantations of White Ash, Larch or Locust trees, each of not less than one acre, nor fewer than one thousand trees per acre, to be raised from the seeds, and which trees shall be in the best thriving state on the 1st of September, 1827 - - 50

For the best Live Hedge, made either of White or Cockspur Thorn, planted after 1820, not less than one hundred rods, and which shall be in the best thriving state in 1827 - - - 50

For the best Buckthorn Hedge, not less than one hundred rods, and which shall be in the best thriving state in 1828 - - - - - 50

To the person who shall have planted out on his farm, since the spring of 1816, the greatest number of Apple Trees, not less than one hundred in number, and who shall exhibit to the Trustees, at the Show in 1827, satisfactory evidence of his having managed them with care and skill - - - 50

FOR DOMESTIC MANUFACTURES.

To the person or Corporation who shall produce the best specimen of fine Broadcloth, not less than 1 5-8 yards wide, exclusive of the list, forty yards in quantity, and dyed in the wool - - - $20

For the second best, do. do. - - - 15

For the best superfine Cassimere, not less than 3-4 yard wide, nor less than forty yards in quantity - 12
For the second best, do. do. - - - 8
For the best superfine Sattinet, 3-4 yard wide, not less than fifty yards - - - - 8
For the second best, do. do. - - - 5

FOR HOUSEHOLD MANUFACTURES.

For the best Woollen Cloth, 3-4 yard wide, not less than twenty yards in quantity - - 12
For the second best, do. do. - - - 8
For the best double milled Kersey, 3-4 yard wide, not less than twenty yards in quantity - - 12
For the second best, do. do. - - - 8
For the best Coating, 3-4 yard wide, not less than twenty yards in quantity - - - - 8
For the second best, do. do. - - - 6
For the best Flannel 7-8 yard wide, not less than forty-five yards in quantity - - - - 10
For the second best, do. do. - - - 7
For the best yard wide Carpeting, not less than thirty yards in quantity - - - - 15
For the second best, do. do. - - - 7
For the best 5-8 yard wide Stair Carpeting, not less than thirty yards in quantity - - - 10
For the second best, do. do. do. - - 7
For the best pair of Blankets, not less than 8-4 wide and 10-4 long - - - - - 6
For the second best, do. do. do. - - 4
For the best Woollen Knit Hose, not less than 12 pair in number - - - - - 5
For the second best, do. do. - - - 3
For the best Worsted Hose, not less than 12 pair in number - - - - - 5
For the second best, do. do. - - - 3
For the best Men's Half Hose (woollen) not less than 12 pair in number - - - - 4
For the second best, do. do. - - - 2

For the best Men's Woollen Gloves, not less than 12 pair in number - - - - 5
For the second best, do. do. - - - 3
For the best Linen Diaper, 5-8 yard wide, not less than 30 yards in quantity - - - - 3
For the second best, do. do. - - - 3
For the best yard wide Diaper (for table linen) not less than 10 yards in quantity - - - 10
For the second best, do. do. - - - 5
For the best specimen of Sewing Silk, raised and spun in this State, of good fast colours, not less than one pound - - - - - 5
For the second best, do. do. - - - 3
For the best Linen Cloth, (for shirting or sheeting) one yard wide, and twenty-five yards long - 8
For the second best, do. do. - - - 4
To the person who shall produce the best specimen of any Cotton Fabrics manufactured in private families, not less than 5 pieces - - - 20

All of the above manufactures must be manufactured within the state of Massachusetts. And all manufactures, when presented, must have a private mark, and any public or known mark must be completely concealed, so as not to be seen or known by the Committee, nor must the Proprietors be present when they are examined; in default of either of these requisitions, the articles will not be deemed entitled to a consideration or premium.

Animals, or manufactured articles, may be offered for a premium at Brighton, notwithstanding they may have received a premium from a County Agricultural Society.

It is understood, that whenever, merely from want of competition, any of the claimants may be considered entitled to the premium, under a literal construction, yet if, in the opinion of the Judges, the object so offered is not deserving of any reward, the Judges shall have a right to reject such claims. Persons to whom premiums shall be awarded, may, at their option, have an article of plate with

suitable inscriptions, in lieu of money. Premiums will be paid within ten days after they shall be awarded.

That in any case in which a pecuniary premium is offered, the Trustees may, having regard to the circumstances of the competitor, award either one of the Society's gold or silver medals in lieu of the pecuniary premium annexed to the several articles.

That if any competitor for any of the Society's premiums shall be discovered to have used any disingenuous measures, by which the objects of the Society have been defeated, such person shall not only forfeit the premium which may have been awarded to him, but be rendered incapable of being ever after a competitor for any of the Society's premiums.

All premiums not demanded within six months after they shall have been awarded, shall be deemed as having been generously given to aid the funds of the Society.

PLOUGHING MATCH.

On the 17th day of October, Premiums will be given to the owners and ploughmen of three Ploughs, drawn by two yoke of oxen, and to the owners and ploughmen of three ploughs drawn by one yoke of oxen, which shall be adjudged by a competent committee, to have performed the *best work with the least expense of labour*, not exceeding half an acre to each plough. And that entries may be made of the names of the competitors until the morning of the 17th. Preference will be given to those who enter first; but if, on calling the list at the hour appointed, precisely, those first named do not appear, the next in order will be preferred. There will be two Committees of three persons each—one to be the judges of the ploughing by double teams, the other of the ploughing by single teams—the latter to have assigned to them a part of the field distinct from that of the double teams.

Premiums as follows, (being the same for the double and single teams.)

First Plough $15	Second Plough $10	Third Plough $6
Ploughman 8	Ploughman 5	Ploughman 3
Driver 4	Driver 3	Driver 2

In each case, if there be no driver, both sums to be awarded to the ploughman.

The persons intending to contend for these Prizes, must give notice in writing to J. Winship, Esq. of Brighton. The competitors will also be considered as agreeing to follow such rules and regulations as may be adopted by the Committees on the subject. The ploughs to be ready to start at 9 o'clock, A. M.

☞ All persons having articles or animals to offer at the Show, will please take notice, that such alterations have been made in the arrangement, as to bring the whole into *one day*—therefore

All *Manufactures* and *Implements* must be brought to the Hall, and entered on *Monday*, the 15th, to be examined on Tuesday, the 16th.

Also Butter, Cheese, Honey, Cider, and Currant Wine on same day, for entry and examination.

All entries of Animals for the Pens, or as Working Cattle, must be entered before Tuesday evening, the 16th, so as to be arranged by 9 o'clock in the morning of Wednesday, the 17th, for public examination.

The Ploughing Matches will commence on *Wednesday* morning, at ½ past 9 o'clock *precisely*.

Trial of Working Oxen at 11 o'clock *precisely*.

The Public Sales of Manufactures and Animals at 12 o'clock.

The applicants will be held to a rigid compliance with this rule relative to entries as well as the other rules prescribed.

Besides such animals as may have been offered for Premiums, any others that are considered by them as possessing fine qualities will be admitted for sale. And for all Animals or Manufactures, that are intended to be sold, notice must be given to the Secretary, before 10 o'clock of the 17th.—Auctioneers will be provided by the Trustees.

By order of the Trustees,

R. SULLIVAN, J. PRINCE,
G. PARSONS, E. H. DERBY,

January, 1827. *Committee.*

MASSACHUSETTS

AGRICULTURAL JOURNAL.

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THE PROCEEDINGS AND REPORTS AT THE BRIGHTON CATTLE SHOW IN OCTOBER, 1827.

From the commencement of the annual cattle show at Brighton, it has been the invariable practice of the Trustees of the Massachusetts Society for promoting agriculture to publish, in their *own* journal, all the reports of the Committees appointed to award premiums. Indeed it is the practice of all the European societies. The French society for the encouragement of the arts, and of agriculture, publish a volume of 300 pages, containing all the details of their triennial exhibition. The uses and benefits of such a publication are too obvious to require elucidation. It furnishes in a more permanent form, than any newspaper can secure, a history of the progress of art, of itself curious and interesting. It affords the best evidence of the activity and beneficial effects of the society. It is the best reward, which can be offered to the intelligent and successful cultivator, or mechanist, often of much greater value to him, than any pecuniary premium. Hence we invariably find, that inventors of useful implements are very anxious to have their inventions favourably spoken of, even if they are judged not to come within the scope of our premiums.

Some persons may think, that the publication in one newspaper is sufficient, and that the pages of our journal should not be occupied by matter *once* published in *ano-*

ther form. We think otherwise; our journal is taken by many, who do not, we are sorry to say, take the valuable paper, the New England Farmer, in which our reports are first published. Such persons, having paid for our journal, think they have a right to possess the proceedings of our board. Others, who take the New England Farmer, and are possessors of complete sets of our journal may prefer to have these proceedings in that form, which they may think more convenient for preservation. There are many persons who take our journal, in *other* states, who do not take the New England Farmer.

These reasons have satisfied us, that the course we have adopted is a proper one. We could, indeed, withhold the publication of our reports from the public journals; but besides that such a course would be churlish, or at least ungracious, the competitors would be dissatisfied with such a delay. We would hazard another remark, that there is a too strong disposition in *all* the editors of public journals to decline copying from each other. The public, in consequence, lose a great amount of interesting information. Instead of the result of many intelligent minds, you obtain (if you take but one or two publications) only the thoughts and the labours of the one or two, to which you subscribe. Our rule is different. We select from all sources, what we think interesting in them.

For example.—The American Farmer is a very interesting work, more adapted to be sure, to the state of agriculture in the middle and southern states than to our own. Few farmers in this state ever see it. Yet there are often interesting discussions in that able journal, which would be read with pleasure and profit, by that class of our practical farmers, who have not an instinctive dread of knowledge, or an unhappy contempt for all, who unite reading with practice. There are two other works of another description, the Memoirs of the New-York Agri-

cultural Society, and of the two Pennsylvania Societies; both of which are full of interesting matter. We avow, that we feel no such pride of authorship, as to fill our journal, with our *own* remarks, when we perceive, that another work seldom or never seen by our citizens, contains more valuable materials than any which we could, at the time, furnish.

In this connexion, we, with unfeigned respect, and with that submission, which as good citizens, we are bound to cherish towards the government, which protects us, would beg leave to advert to a proposition, made in a former legislature, to repeal the law affording a patronage to the Massachusetts Society for promoting agriculture. Unquestionably, it is not only the right but the solemn duty of the Legislature to withdraw its support from any institution, which it may have patronized, whenever it shall discover that its bounty has been of no, or of little public value, or if that bounty has been misapplied. In the year 1792 the Legislature saw fit to incorporate a body, comprising members from every part of the state, including Maine, for the purpose of fostering the interests of agriculture, and of affording to a class of citizens, comprising three fourths of the whole population, the means of knowing, not only the improvements in their art, which should be made in Europe, but the *local* improvements made by skilful and ingenious farmers in our own country. The extent of the patronage amounted to a grant of a township of Eastern lands, then worth in the market about 2000 dollars, and the payment of the expense of printing their proceedings, which for many years did not exceed two hundred dollars per annum, equivalent to *half* of *one day's* pay of the members of the Legislature. When our society became more active, and published two numbers a year, it amounted to four hundred dollars a year. For this trifling sum, the Massachusetts Society for promoting agriculture, furnished from 400 to 600 co-

pies to the members of the Legislature gratis, and thus enabled them to carry home to their respective towns, the result of the labours of the Society, and thus to spread them throughout the state. It may be said, however, that they were of *no value.* It does not become us to say, that they were; but we may be permitted to state the facts, that our journals have been subscribed for, by many citizens of this state, and of other states, and of the British Provinces adjoining to us; that they have been spoken of with great commendation in this country and in Europe; that they have been preserved and bound up by hundreds of individuals, and that they, in fact, contain, as great a mass of information from practical farmers, on the great subjects of agriculture—on cattle—the making of butter, cheese and cider, on *general* cultivation, and on horticulture, as can be found in any equal number of volumes. That errors have been often found in them, and incorrect opinions advanced is true, but it is not more true, than it is of other miscellaneous journals. The only way of eliciting truth is a free discussion, and if one writers err, ten are found to correct the error. The Massachusetts society for promoting agriculture are not benefited by the grant in question.

The only effect of withdrawing it, would be, to oblige them to withhold an equal amount of premiums, which they now grant to every part of the state. Three fourths of their premiums are dispersed in counties not contiguous to the capital. If the agricultural interest are convinced that their art *cannot* be improved, or is *not* improved by our efforts, or if they think, that the small bounty they now bestow, is productive of less advantage than the diminutive sum, which they pay, they *ought* to withhold it, and we shall cheerfully submit, and rely upon our own diminished means, to do as much good as we can. We are free to say, however, as we have a right to say, that the policy of the proposed measure is at least ques-

tionable. We are aware that these remarks will be too late to affect in any way (even if they deserve it) the decision of the Legislature; yet they may produce some effect on *public opinion*, and at some future period, induce the Legislature to grant *something* for that great body, who pay, and who, by their industry, contribute so much to the strength and prosperity of the state.

The Massachusetts Agricultural Society can say *something* in their own behalf. While our two public ministers, Livingston and Humphreys, are entitled to credit from the introduction of Merino sheep, it should be recollected, that the Massachusetts Society was the *first by its premiums* to encourage their introduction, and thus destroyed the monopoly, which these gentlemen, for many years, enjoyed. In the same manner, they encouraged the introduction of long woolled sheep, and they have been the organs, through whom, many other fine animals have been introduced into the state. To agriculture, they have been of no small service, in introducing root culture, and to horticulture, they humbly believe, they have rendered invaluable services, by introducing many culinary plants, now in common use, and deemed indispensable in the great markets; while they have added a long catalogue to the mean list of fruits, which Massachusetts possessed thirty years since. Still, if the Legislature esteem these efforts of less value, than the small annuity, which they commit to them, as public stewards for the general welfare, they will never hear a word of complaint from this society.

Address of the Hon. John Lowell, *President of the Massachusetts Agricultural Society, delivered at the public meeting of the Society on the 17th inst. previous to the declaration of the premiums awarded to the competitors at the Cattle Show.*

The Trustees of the Massachusetts Agricultural Society this year resolved to make a very important change in their arrangements—instead of extending their show to two successive days, they determined to imitate the example of other societies in this state, by confining it to *one*. It may naturally be asked why such a measure, so convenient to competitors, was not adopted before. To this we reply that our situation was, in many important respects, different from that of the interior societies. Our society was a general one, offering premiums throughout the whole state. We had two classes of competitors—those in the adjacent counties of Middlesex and Norfolk, and those from the most remote parts of the state. With respect to those who came from a great distance, it was impossible for them to return home, either the night of the show, or even the next night. It was therefore of comparatively small moment to them, whether they were or were not detained one night longer. With respect to competitors in the adjoining counties, most of them could return home the *first* day, and were not competitors on the *second*. The Norfolk and Middlesex farmers, who entered into competition in the ploughing matches and working cattle, came only on the *second* day. But to the Trustees themselves and to the spectators, the repetition was very inconvenient, expensive and tedious. The Trustees, influenced by these considerations, have this year unanimously decided to try the experiment of confining the exhibition of cattle, the ploughing match and of working cattle to one day. This change obliged them to give up all preparatory meetings, and to make the day purely one of business. The same necessity

obliges us to dispense with all formal addresses, and to limit ourselves to the simple declaration of the premiums awarded, without those explanations of the grounds upon which the decisions are founded, which have been usually given on such occasions. Indeed there is less necessity for such minuteness. In the origin of the Institution, there were little unfounded jealousies to be overcome—there was not that entire confidence in the rectitude and fairness of the judges, to which experience has demonstrated they were entitled. It was improperly viewed as the exhibition of the more opulent farmers, in which a plain cultivator stood a very humble chance. All these errors and prejudices (for they were always such) have been dissipated by time. The whole course is so fair—the Trustees have so little agency in awarding the premiums, they are so entirely under the control of experienced graziers and farmers, that we need no longer to make apologies or excuses for our decisions. The question, however, will naturally occur, and it ought, in every successive year, to be repeated, have these shows been productive of serious and lasting benefits to the agricultural interests, or which is the same thing, to the nation? This is a question of *fact*, which every man will settle in his own mind according to his experience, or his prejudices. For myself, I have no doubt that the effects, remote and immediate, of these public exhibitions, have been as great as their most sanguine friends anticipated. I cannot better introduce a few remarks on this topic, than by a very apposite quotation from a recent British work, inserted in a late number of the New England Farmer.

"The great body of cultivators in Great Britain, whose farms are of considerable extent, have generally received a suitable education, by which their minds are enlarged; animated with a desire to improve their condition in the world, and rendered equally quick to perceive, and ready to adopt, such improvements as may occasionally be pro-

posed. In *former* times, it was objected that farmers were *obstinate* and *bigoted*, averse to every kind of innovation upon established practice, and persisting in ancient systems, even after their deficiency and inutility had been ascertained in the most decisive manner. Whatever truth there might formerly be in the objection, its force is now *completely* removed, there being no set of men *whatever more open* to conviction or more willing to adopt new practices, than the British farmers of the present day. This change of disposition has been accomplished by a general circulation of agricultural knowledge, since the National Board of Agriculture was established, by numerous periodical publications on rural economy, and by that increase of wealth which flowed from the exertions of the farmer, and which naturally stimulated a search after *new* improvements. According to the measure of attention bestowed upon the education of farmers, it may be expected that improvement will hereafter advance. A man of uncultivated mind may hold a plough, or drive a harrow in a sufficient manner, but he will seldom introduce an *improvement*, or be the means of effecting any change in the established system of rural economy."—*Brown's Treatise on Agriculture.*

This extract from a British work is truly cheering to the friends of agricultural improvement in *our* country. I know my audience too thoroughly to rely upon their unqualified acceptance of the truths therein alleged without due evidence. We of New England, are a cautious and thinking people, slow in adopting new opinions. Long may we continue such. Well, then, are the facts stated by the writer *true*, as respects *England*? They are within my own personal knowledge, derived from authentic documents, and ocular evidence, strictly true, and in no degree exaggerated. British agriculture in 1780, when the Royal Institution for its promotion, was founded by Parliament with an ample donation of $22,000 a year, was in a better

state than ours is at the *present* time. Yet the progress has been so great in Great Britain since the establishment of the National Board of Agriculture, and of the Bath and West of England Society, for the promotion of the same objects, that it has been fully proved by official documents, that the produce of British farming industry, with a worse climate and soil, is to that of France, taking the number of acres and of labourers into view, nearly as two to one. Let us illustrate this important fact by reference to *one* successful cultivator. Mr. Coke, of Norfolk, whose name ought to be familiar with every American as well as British farmer, inherited some thirty-five years since, a great landed estate in Norfolk, the whole rental of which was only £2000, or $8800 a year. Being an active and intelligent man, he introduced the Tullian husbandry, which consists in frequent rotations of crops, and in sowing in drills; in short, in a more spirited use of the plough and other improved instruments. In the life time of this one man, and he is still alive, by the plough alone, and by adopting proper successions of plants, he has raised his rental from $8800 to $200,000 a year; in other words, increased the value of his estate 24 times. No speculations in banks, no mining discoveries—no, not even Potosi, in its virgin state when silver was found upon the surface, can show such an appreciation of property as has been produced by skill, enlightened skill, applied to the surface.

Yet all this has been effected by *tenants*, not *owners* of the soil, but under leases for 21 years, subject to the hazards of a refusul to renew the leases, by a *less enlightened* heir. These are facts not to be disputed, and they prove that agriculture in the short space of one man's life, has undergone improvements of which antiquity had no conception.

Is it possible that the *freemen* of this country, *owners* of the soil, are not as capable of improving the condition of their farms? Most assuredly, they are so—they are doing

it as rapidly as could be expected, and they are alive to the advantages afforded to them by the attention paid to the subject, by well informed men; by the circulation of facts and experiments in useful periodical journals. The very fact that such journals are so *generally* patronized, is of itself conclusive proof of the progress which they are making in knowledge, and of their zeal to acquire more. The friend of improvement should be as patient as he is firm; changes in habits, and especially in the habits of a retired class of men, must be slow; the manufacturers, vigilant, and combined, eager, and quick-sighted, learn in a week, or a month, any new improvement introduced by their rival, however distant; but the farmer is slow, his interest is less direct; without capital, he dreads a new experiment; but still his progress is perceptible, and unquestionable. We, who have been called by our official duties to watch the improvement in every branch of agriculture, perceive a vast change within the last twenty-five years; new fruits, new roots, and grasses, new modes of culture, greater attention to the preservation and making of manures, are most obvious on every side; our meadows are better ditched; we learn that sand and gravel are better for them, than the finest soils and the richest manures. Still there are some hundred thousand acres of meadow land which produce grass scarcely worth the labour of cutting, which may, by skill and little labour, be rendered the most productive parts of our farms.

Thirty years since, the general complaint was, that our old orchards were perishing, and no new ones planted. The complaint was well founded, as all of us of three score years of age well know. This society, alarmed at the fact, offered more than nine years since, a liberal premium—a premium of itself sufficient to defray the whole expense of planting an orchard of apple trees, and they have continued the premium from that time to the present. No application has however been made for this premium

until the present year. This year four competitors presented themselves for this premium.

We need not say how grateful such applications were to us. They were proofs that our premiums had excited the public attention; they gave the satisfactory assurance that the apple tree, the farmer's best friend, was no longer neglected; its fruit, the most profitable production of a farm; its product in cider, the best possible substitute for spirituous liquors, and the abundance of which, if well manufactured, is much more likely to check the use of distilled spirits, than all the associations and too little discriminate representations which the well meant zeal of pious and excellent friends to virtue could put forth.

At any rate, the abundance of a pleasant and wholesome beverage, of less intoxicating qualities, is the best auxiliary to the laudable efforts now making to diminish the consumption of ardent spirits. In all these views, so many applications for premiums for orchards planted since 1816, and which will be in perfection in the days of our grandchildren, were to be regarded with great interest.— There will be some benefit we hope derived from giving a brief account of these several applications.

The applicant, whose orchard we first examined, was Charles Davis, Esq. of Roxbury. To those who knew the spirit and intelligence with which he has managed a rough and neglected farm, it will be no surprise to learn, that in a piece of ground entirely covered with rocks and bushes in 1819, he has an orchard of the most uncommon growth and beauty. The whole number of apple trees planted out by him since that period, is 150; such was their flourishing state that the committee, on leaving his farm, thought that he must be the successful competitor. For his laudable and successful exertions, the Trustees award to him an honorary premium of ten dollars. From his estate they proceeded to examine the orchards of Mr. ——— Baldwin of Milton; there could scarcely be a more interesting ex-

hibition than this farm afforded. Mr. Baldwin, an old revolutionary soldier, took possession of this farm when he was 55 years of age; it was in the roughest possible state; he has made a considerable portion of it a perfect garden; his apple trees planted in 1815 and 1816, are, we believe, the largest and finest in the state. He has also done great honour to himself, and benefit to the public, by forming an extensive nursery of fruit trees, for which we have been, and still continue to be, in a great measure, tributary to the cultivators of other states. When we left Mr. Baldwin, it was with a deep conviction of his rare merit, as a skilful cultivator, and with a hope, that we should be enabled to award to him the society's premium of 50 dollars—but subsequent examinations render this impossible, consistently with our duty, and consciences. We have therefore recommended to the Trustees, and they have agreed to award to Mr. Baldwin, an honorary premium of 10 dollars, for the spirit, intelligence and perseverance, which he has displayed in his nursery and orchard. Some time after, the Committee, consisting of the Hon. Messrs. Welles, Sullivan, Guild and myself, visited the College farm, which was under a long lease to Mr. Nahum Hardy. Mr. Hardy claimed the society's premium. We there found an orchard of eight acres, reclaimed from the wildest state, and filled with a most beautiful display of apple trees, 500 in number. The state and condition of the trees evinced the greatest care and skill, and we congratulate the public, who are owners of the farm, through the medium of the University, on their having a tenant so capable of increasing its value, and who appears to have devoted his capacity to so good effect. Immediately after viewing Mr. Hardy's orchard, the Committee proceeded to examine a younger orchard, planted by Elias Phinney, Esq. of Charlestown and Lexington. Mr. Phinney selected a most favourable spot, declining towards the south, covered five years since with shrub oaks and rocks, and there

planted his orchard, 400 in number, of the best fruits. The trees were in the most beautiful condition—every superfluous twig carefully and judiciously extirpated, and their general health gave the best evidence of judicious management. If the premium of the society had been offered to the orchard, in all respects best managed, without any regard to *number*, Mr. Phinney would probably have carried the premium—but as Mr. Hardy's trees were in an excellent condition, and exceeded Mr. Phinney's in number by 100, the committee consider Mr. Hardy entitled to the society's premium of 50 dollars, and they award it to him accordingly.

The general state of Mr. Phinney's farm was, however, so perfect, considering the means applied to it—there was so much good judgment, in all his operations—he having made also the first, and a very successful experiment in making wine, from the native grape, that your committee recommended, and the trustees have voted, to present to Mr. Phinney a cup, of the value of 20 dollars, with such inscriptions as a committee of the trustees may devise, indicative of his merit, as a farmer. Well then, my fellow citizens, shall it be said, that no good results from these societies? Is it of *no* benefit that men, who merit well of their country, have a *sure* and *impartial* means of making their merit *known*? Are our farmers so debased, so indifferent to their own best interests, and reputation, as not to feel excited by the success of *others*? Why should we presume it, when we see, at once, four competitors, distant from each other, in Norfolk and Middlesex, competing for *one* of our most *important*, and hitherto neglected premiums? We hope yet to see a claim for our premium for forest trees. Let us be patient. Improvement in every branch of industry is slow, but certain—in agriculture, more slow than in any other—but as it is *more slow*, so it is more permanent, and more important. Let us all, then, be moderate in our expectations, but *firm* in

our reliance on eventual success. Our temperate climate, our natural industry, zeal and intelligence, will not deceive us. New England will be, what she always has been, the nursery of arts, of intelligence, of enterprise, and the abode of virtue, obedience to the laws and love of liberty. She will never desert her rulers, whether national or state, so long as she is convinced that they consult the *true* interests of the republic.—She will forever cherish agriculture as the acknowledged foundation of all national wealth, while she will recollect that her numerous harbours invite her to avail herself of the benefits of foreign commerce, which has raised her to her present comparative importance, and produced a surplus capital, which can in times of peace, only be successfully employed in manufactures and internal improvements, to which the rare mechanical skill, untiring industry, economy and perseverance of her citizens especially invite her, while her numerous and inexhaustible waterfalls afford her facilities, which no other portion of our country can boast. Let our maxim forever be, "A liberal union, without jealousy, of agricultural, manufacturing and commercial skill." By a strict adherence to this liberal principle, the population of New England must increase in wealth and power—power, of the noblest description, most advantageous to the nation, the power of mind; a moral and beneficent power, which ought not to be the subject of jealousy or envy, but which will command the respect of our sister states, while it will essentially promote *their best* interests. We must be forever supplied with our flour and cotton, from the South, but we shall send them, in return, their own products in a manufactured state, and contribute to their *wealth*, their comforts and their luxuries, at least as much as to our own. Such seems to be the order of Divine Providence. Our comparatively sterile soil, and severe winters, oblige us to be the labourers for our brethren. Local and temporary prejudices may retard, but can never change the order—the beneficent order of Providence.

It would naturally be expected, that something should be said of our present show, but a moment's reflection will convince our audience that this is entirely impracticable. The new arrangements have left no trustee at leisure to make any written remarks, and how could I, engaged in examining and aiding in the decision, of three distinct classes of animals, be expected to say any thing of the others, or of the ploughing match, or the working cattle, of whose respective merits I have no knowledge. All I can say is, that in my own branch of duty the show was highly respectable. Full reports will be made by the chairmen of the several committees, which will assign the grounds of their respective decisions. It would be, however, a gross neglect on my part, if I should omit to notice the renewed exertions of our fellow countryman, Gen. Coffin, to contribute towards the agriculture of his native state. Gen. Coffin, it is well known and will be long remembered, generously introduced, at great expense, a stallion of the cart horse breed, of prodigious power, bone and muscle. His brother, Admiral Sir Isaac Coffin, at various times, has presented to his native state, Admiral, a bull of the finest short horned breed, a cow of the same race; a Herefordshire bull, Sir Isaac, of uncommon beauty, and whose stock to my own knowledge have been of rare beauty of form; a stud horse of the Yorkshire race, and a mare of the same breed. For these repeated acts of public spirit this Society could do no less than to present to each of these brothers, rivals in good works, their gold medal of fifty dollars.

Gen. Coffin, with the same untiring zeal for the interests of his native country, has purchased three rams and three ewes of the Devonshire Nots, a race of long woolled sheep closely allied to the improved Leicesters. One of these sheep was sheared at a year old on his passage, and gave 13 pounds of long and fine wool. They are as valuable for their meat as for food, the quarters weighing from

30 to 40 pounds per quarter, and, as it is said, of an excellent quality for the table.

The trustees will endeavour so to place these sheep, as that the beneficent object of the donor shall be carried into full effect. General Coffin, not content with purchasing them, at an age above three score years and ten, has followed them, during their long passage to New-Brunswick, and thence, without delay, from Eastport to Boston, in order, that they might grace the show of this society on this anniversary. He is now present at our festival.

There is no feeling stronger, than that of an attachment to the country in which we are born.—Time and distance have no effect, unless it be in making the feeling more intense. I know of no case, more touching, none in which the strength of that natural feeling has been more strongly exemplified, than in that of these two brothers, who separated from their country in youth, engaged in the service of a nation, now foreign to us, look back with a kind, affectionate and devoted attachment, to the country of their birth. This family (it is probably well known to you all) were among the earliest settlers of Nantucket, an island, which has done more than any other spot, to raise the reputation of our nation, for hardy enterprise, and unblemished morals.

Shall I receive a single dissentient vote, when I propose the thanks of this assembled body of full blooded yankees, to General Coffin, and his brother, Admiral Sir Isaac Coffin.

[The above motion being put to vote, was carried by a show of hands from every person present.]

REPORT II.

The Committee on Milch Cows, Heifers, &c. at the Show of the Massachusetts Agricultural Society, at Brighton, Oct. 17, *consisting of Messrs.* JOHN WELLES, THOMAS WILLIAMS *of Noddle's Island, and* JOHN MEARS *of Dorchester, Report:*

That they could have wished more fully to have perceived that whilst the face of the country every where presents the marks of improvement in our stock, whilst the zeal of our farmers is awakened and their judgment displayed by a recurrence to the imported breeds as well as the most careful selection of our native cattle, the pens at our annual cattle show might have afforded, as relates to the dairy, to those who honoured the day and its exhibitions, at least more multiplied instances of those improvements that have been effected. This is due to the liberal encouragement of the government to the efforts of the society, and to the deep interest which should be taken in what has such intimate relation to the staples of the country. The committee trust, that the good sense of those, whose character is thus at stake, may be relied on, to give at their own holiday, such an increasing display, as the country can make, and is alike due to their own character, and to the many visitors, whose opinions are often founded on the appearance of the annual show of the Massachusetts Agricultural Society. It will be seen however, that there were not wanting many very fine and productive milch animals, as well as beautiful heifers not only amongst those offered for premium, but those for exhibition also.

MILCH COWS.

The premiums on milch cows, your committee award as follows:

To Oliver Shed, of Weston, for his cow, of native stock, the first premium, $30 00

From the milk of this cow there was made, from June 11th, to Oct. 11th, inclusive, from eight to eleven pounds of butter per week, viz. June and July, over ten pounds; August and September, to Oct. 11th, nearly nine pounds per week. This was supposed to be a native cow of fair appearance.

To James Robbins, of Watertown, the second premium for his cow, of native stock, $20 00

From the milk of this cow, in May and June, there was made from ten to thirteen pounds of butter, and nearly eleven pounds on an average. Also of fair appearance.

To John Meriam, of Concord, the third premium, for his native cow, $15 00

It appears that this cow had given for some time, ten quarts at a milking; and held out (it was said) well. Her milk had been made into butter but a short time, and then gave ten and a half pounds per week. This cow was small, but well proportioned.

MILCH HEIFERS.

For the best milch heifer, the committee award the first premium to J. W. Watson, of Princeton, $15 00

This heifer was of the Holderness breed. Mr. W. states, she came in, in May last, and her calf weighed on the 16th of June, when killed, 23½ pounds a quarter. For several weeks following, she gave 23 to 24 quarts of milk a day, and made ten and a half pounds of butter a week. In Sept. her milk was again kept separate, and she gave 16 quarts a day, and made 7¼ pounds of butter a week. She had no other than pasture feed.

To Aaron Pike, of Milton, the second premium for a milch heifer, $10 00

This heifer came in at a disadvantage, in the opinion of the committee, being only 18 months old, she was proba-

bly, in part, of the imported breeds, of good appearance, and the animal was thought under all circumstances, thus entitled.

HEIFERS.

For the best heifer, not having had a calf, the committee, award the 1st premium to H. Sprague of Spencer, $12 00

For his heifer 2½ years old. This was ¾ Holderness, and of fine appearance.

To J. W. Watson of Princeton, the committee award the 2d premium, $10

This was of the Holderness breed, and of good promise.

To John Ellis of Brighton, the committee award the 3d premium, $8

This was a fine Heifer ½ Holderness, 3 years old.

To Aaron Willard, jun. of Boston, the committee award the 4th premium, $6

This animal was but about 8 months old, and could hardly be considered more than a calf being still with a cow. But the committee thought few animals have appeared at the cattle show of more promise. Mr. Willard states that the heifer was from his imported Durham cow; sired by the bull of John M'Intire of Needham, which received the second premium in 1824.

Amongst the animals entered for premium several were thought worthy of notice.

Richard Richardson of Ashby had a cow which calved on the 7th of January; the calf was in high order in March, and then marketed—another was put to the cow and disposed of in June; these brought about $15. A third was at her side excessively fat, for which he had refused $25. This is a rare instance of product, and there can be no doubt of the value of the animal.

Nathan Adams of Medford entered a cow for premium

also—this was of the "Fill Pail" breed, of good figure, promise and milch properties—but there was a deficiency of statement in those several particulars which could have entitled her to a premium.

Doctor Benjamin Austin also entered a cow which had a fine calf of the Coelebs breed at her side—but as to this and several other animals the committee had no particular representation, those who had them in charge being drawn away perhaps by the ploughing match or other spectacles of the day.

The committee thus close the detail of these observations, made requisite on the distribution of the prizes. Should they in any case be supposed to have erred in judgment, they can only say that in all instances they have been of one opinion.

It would be an ill return for the zeal and meritorious exertions of those who presented fine animals for exhibition, only, not to notice those instances which were conspicuous and gave interest to the show.

Mr. Parsons exhibited his productive Alderney cow, with a full blood yearling. Mr. Seaverns a strongly marked heifer of the same breed. Mr. Z. Cook of Dorchester exhibited a cow and beautiful calf of the Bakewell breed crossed by Coelebs. There were several other promising heifers from Holderness, Coelebs and Denton.

Mr. Mears exhibited a heifer, a cross of Holderness and Coelebs on the Bakewell Breed, 17 months old, a fine figure, which weighed 780 lbs. Mr. Welles exhibited 2 heifers of the Herefordshire breed, (Sir Isaac) a cow and 4 heifers from Denton, and several cows and heifers from Holderness and Coelebs.

The committee repeat that the want of greater fullness in display did injustice to the condition and capacity of the country. But this it is in the power of our Farmers to correct. They will not suffer the apprehension to prevail that they are indifferent to the fruits of their own ex-

ertions—that no useful competition can be excited, or that any well advised efforts for the encouragement of agriculture can be unavailing.

All which is submitted

By order of the Committee,

JOHN WELLES, *Chairman.*

REPORT III.

The Committee on the Ploughing Match with one yoke of Oxen, consisting of E. HERSEY DERBY, JOSIAH TITCOMB, *Esqrs. and Deacon* ELIJAH COREY, *Report:*

There were sixteen entries for ploughing, ten only of which could be accommodated with Lots, which were laid out thirty rods each.

Most of the ploughs were of the improved kind with cast iron mould boards.

The ploughing was to be five inches deep, and the furrows not more than ten inches in width.

Fifty minutes were allowed for the performance of the work.

The shortest time taken was thirty-eight minutes, and the longest fifty-seven.

The Competitors were requested not to hurry their cattle, as the goodness of the work, together with the good management of the Ploughmen, and the general appearance and tractability of the Oxen were to be the principal criterions in awarding the Premiums.

The Committee state with pleasure that most of the ploughing was of the first order. That done by A. A. Wheeler of Concord, would have entitled him to one of the first premiums, had the work been completed within the time allowed.

They award as follows:

1st premium to Joseph Barrett, of Concord	$15
Same as ploughman	8
Same as driver	4
	$27
2d do. to George M. Barrett of Concord	$10
Same as ploughman	5
The driver	3
	$18
3d do. to Samuel Hoar, of Lincoln	$6
Same as ploughman	3
The driver	2
	$11

E. HERSEY DERBY, *Chairman.*

REPORT IV.

The Committee on Agricultural Inventions, &c. report as follows, viz.

Messrs. Jackson and Wright presented for premium, in behalf of Mr. Charles Reed, of East Bridgewater, the inventor, a machine for hammering stone; to be worked either by hand, horse, or water power; a certificate was produced, stating, that with four picks or hammers applied to the machine, it hammered and finished handsomely in two hours and a half, a stone measuring on the surface five feet two inches in length, and one foot in width; the depth of stone picked before the finish, averaged three quarters of an inch; the finish was made by applying to the machine two finishers or smoothing pickers—a stone was also produced and shown the committee, which was hammered and finished by the machine, and the work well executed. The committee thought great credit was due to Mr. Reed for his invention, but think the usefulness of

this machine in its present form, has not been sufficiently proved by experiment, and do not recommend a premium.

Mr. J. R. Newell, of the Agricultural Establishment in Boston, presented for premium, in behalf of Mr. Russell Burke, an improved Side-hill-plough. The committee took some pains to test the improvement in this plough, and had a number of furrows turned with it; they could not but notice the ease and despatch with which the mould board was shifted at the end of the furrow, and was of opinion it would answer for many kinds of level grounds; with its present mould board it is calculated to turn up and leave the soil very light, and with a little variation in the mould board, it might answer equally well for sward land; it is simple in construction, and not easily put out of order. The committee considered it such an improvement on the southern side-hill-plough, (one of which is now in the hall of the society) that they recommend a premium of twelve dollars to be paid to Mr. Newell for Mr. Russell Burke.

Mr. J. R. Newell also presented for premium, Mr. Howard's self-governing plough, which is regulated by a wheel at the end of a bar attached to the beam of the plough, and projecting horizontally, and may be easily fitted to the beam of any plough. A single furrow is first struck out in which the wheel is to run, the width of the furrow is given by adjusting the wheel on the bar. The committee saw a number of furrows turned, and the plough went the length of the furrows without being touched by the ploughman or driver; it appeared to answer the description given by Mr. Howard, who produced a certificate signed by twelve persons in Hingham, in which they state that the plough has been used in their presence, and answers the purpose of conducting and regulating itself in such manner as set forth by Mr. Howard, and renders a ploughman unnecessary, except to adjust the wheel, enter the plough in the ground, and turn it when at the end of the furrow, the same person can do all that is required of

a driver. The committee were of opinion it would not answer for stony land, or where the surface is very irregular; they however consider Mr. Howard entitled to a premium for the inventions, and recommend the sum of twelve dollars to be paid him.

Mr. John Mears, of Dorchester, presented for premium an improvement made by him, in the manner of ironing an ox yoke, also a shackle applicable to the draft chain. Mr. Mears handed the committee the following specification. "The improvement of the yoke, other than has been presented to a former committee of the society, consists in the band encircling the beam, with the ring passing through an eye at the under-part of the band, and firmly secured to it; instead of the staple passing through the beam, thereby weakening the part on which the greatest strain is brought, the staple operating as a pry or lever to split the yoke, whereas the band being secured with screws on the top of the yoke has a tendency to prevent splitting in any direction; it may also be adjusted to the strength or other circumstances of either ox, by turning the nuts and slipping the band towards either end of the yoke." Of the shackle, Mr. Mears said it was for chain draft, to connect the oxen to the plough or other instrument, at such distance as is thought most proper; by passing the pin through any link of the chain. It preserves the links of the chain from injury by doubling through the ring of the yoke, it drops the chain from the yoke, and thereby gives a correct line of draft from the plough to all the leading cattle, instead of hooking to the staple as is the common practice; it prevents the yoke from being twitched forward by every irregularity of movement in the leading cattle; it facilitates their travelling and makes it more easy for the ploughman in directing the plough. The committee thought it would be an improvement if the small round bolt that passes through the ends of the shackle, was made of an oval form, it could then pass

through the links of the smallest chains used for draft, and the strength not be diminished,—for the improvement in the manner of ironing the yoke, and for the shackle, they recommend a premium to Mr. Mears, of ten dollars.

Mr. Mears also presented for premium, a Scythe-case, for the safe transportation of scythes to and from the salt marsh or fresh meadows lying distant from home; it was a box in which six or eight scythes with the rifles, could be easily and readily packed, and in such manner as to render them secure from doing or suffering harm; it was simple and convenient for the purpose mentioned by Mr. Mears, but the committee do not recommend a premium.

A newly invented Lamp-taper and wick, a Pruning-saw set in a small frame with a socket, in which a pole was secured, the top of the frame was made sharp for the purpose of cutting the twigs or suckers by an upward or downward motion—and an improvement in securing the Crane-neck hoe plates to the shanks were severally offered for premium. Some ingenuity, and skill in the workmanship was evident, but the committee did not think them entitled to a premium.

Mr. J. R. Newell presented for exhibition a number of articles that attracted attention, and gave evidence of great improvement in many of the agricultural implements. The committee felt great satisfaction in examining his new invented Corn-sheller. Howard's double mould board plough which was much improved by the addition of a coulter, and an alteration in the shape of the share to which the coulter was secured, his self-sharpening plough, a hand garden plough, Darby's patent boxes for carriage wheels, Gault's and Crosby's patent churns, and Bailey's improved hand corn mill. And they hope Mr. Newell will be fully remunerated for any trouble or expense incurred, by an increased application at his Agricultural Store, not only for such articles as were exhibited

by him, but for any other useful agricultural or horticultural implements.

GORHAM PARSONS.
DANIEL TREADWELL.
Oct. 17, 1827. DAVID MOODY.

REPORT V.

The Committee on Manufactures award to

Slater & Howard of Dudley, for the best Broad Cloths, (blue and black) the first premium, $20

To the same for their Drab Cloth, 2d premium, 15

Slater & Howard, for the best Cassimere, first premium, 12

Bemis Watertown Factory, for the best satinett, the first premium, 8

Sylvanus Holbrook, of Northbridge, for the second best, the 2d premium, 5

Richard Jaques, of Newbury, for the best household woollen cloth, the first premium, 12

Jedediah Wood, of Marlboro', for the second best do. the second premium, 8

Mrs. Stephen Fales, of New Braintree, for the best blankets, the first premium, 6

Lucy Bancroft, of Pepperel, for the next best, the second premium, 4

Frances Foster, of New Braintree, for the best flannel, the first premium, 10

George M. Barrett, of Concord, for the next best, the second premium, 7

Mrs. John Hunter, for linen sheeting, the second premium, 4

B. C. Perkins, of Becket, for linen diaper, the second premium, 5

Richard Jaques, of Newbury, for the best carpeting, (household) the first premium, 15

Lydia Foster, of New Braintree, for the next best, (household,) $7

GRATUITIES.

Harriet Gilbert, of Norton, for a hearth rug, $3
Emerline Patterson, of Boston, for a lace cap, 1
Maria L. Prouty, of Boston, for do. 1
Abigail E. Clough, of Boston, for a lace veil, 2
Mary Hyler, of Boston, for do. 1
Augusta Delano, of Kingston, for a cotton counterpane, 2
Rebecca W. Brooks, of Lincoln, for fine worsted hose, 2
To the Medway Manufacturing Company for hearth rugs, 3
Hannah H. Wheeler, of Grafton, for do. 3
Mary Fisher, of Westboro', for straw bonnets, 2
Louisa Brigham, of Marlboro', for specimens of painting on velvet, 3
Sarah Tappan, of Roxbury, for woollen hose, 2
Miss Heath, of Roxbury, for a muslin mantle and lace veil, 4
Pamela H. Allen, of Bridgewater, for lace work, 2
Harriet Allen, of do. for lace trimmings, 2
Emeline Allen, of do. for a black lace veil, 2
Miss Childs, of Roxbury, for do. 1
To a young lady, of Salem, for a bead belt, 2
To a child, twelve years of age, for a vandyke, of silk weed, 1
Fanny Penniman, of Boston, for a hearth rug, 2
Elizabeth Sherman, of East Sudbury, for a specimen of artificial flowers, 2

Among the numerous articles of manufacture offered for exhibition only, the committee noticed specimens of beautiful lace from the Ipswich Factory. The factory prices were affixed to them, which were lower than the prices of imported lace of the same quality. There were two pieces of cotton duck, from the Bemis Watertown Factory, of very substantial fabric. This kind of duck

has been for some time in use, and is highly approved. The carpeting from the Medway Factory, an imitation of the Kiderminster, was of an excellent quality; the patterns were well chosen, and the colours bright and in good taste. This branch of manufacture has obtained a firm footing, and is rapidly extending itself in this country. Among the various specimens of household industry, the patch work carpet, by Miss Bates, of Weymouth; and a bed quilt of the same fabric, by another lady, were much commended, as works of patient industry.

The articles of fancy work were numerous—such as specimens of lace work, ornamental painting on velvet, and fabrics of the Turkey Down, &c. The Committee having selected those among them which they considered the best, to receive the amount usually awarded in gratuities, are happy to bear testimony to the ingenuity, skill and taste discovered in many of them, which they did not feel authorised to compliment by an award of money.

Mr. Munroe of Concord, whose writing and drawing pencils have been noticed in former years, for their good appearance and cheapness, offered a large assortment the present year, and among them a specimen of the *self pointing* pencils. The Committee had no opportunity to make such a trial of them as to test their quality.

R. SULLIVAN,
SAMUEL APPLETON,
EDW. TUCKERMAN,
JOHN LEMIST. } *Committee.*

REPORT VI.

The Committee on Merino Sheep, and Swine, consisting of John Heard, Jr. Samuel Jaques, Jr. Esq. *of Charlestown, and* Mr. Wm. Stone, *of South Boston*, Report,

That the Merino sheep offered for premium this year, were fewer in number, and more inferior in quality, than

those in former years; and which they attribute in a great degree to the encouragement that has been given for the increase. The flocks having become too numerous to be supported on the valuable land near the metropolis, have been driven into the interior, and so remote that gentlemen cannot or do not exhibit them at the Brighton show. That they have increased in number, and in fineness of fleece almost without a parallel, since their first introduction into this country, is certainly true; many of our hills bear evident marks of the fact, and if the premiums alone are an inadequate inducement,—patriotism, public spirit, and a desire to promote the best interest of their country, should prompt gentlemen to contribute their share of the gratification of the visitors of the cattle show; and induce others to imitate their laudable example.

In deciding the premiums for Merino sheep, the committee were governed principally by the fineness of the fleece; but they did not totally disregard the form and appearance of the animal.—They had more difficulty in determining, whether they should award any premium, than to whom to award it; and after some consultation and consideration, they have awarded to

Joseph Barrett, the second premium for a Merino ram, $10 00

There was no ram of so superior a quality as to be entitled to the first premium.

The Merino ewes, presented for premium, were examined with great care and attention, by the committee, in hopes that they might find a requisite number of sufficient fineness of fleece to award one of the premiums; but having a regard to their duty and responsibility, and the regulations of the society, they could not discover any that were entitled to either of the premiums, for they believed, that as good, and better Merino ewes were not uncommon.

They have awarded to Oliver Tilton, for the best sow, the first premium of $12 00

To George Everett, for the next best, the second premium, $8 00

To Jacob Melvin, for the next best, the third premium, $5 00

To Silas Dudley, for the best boar, the first premium, $12 00

To Joseph Dudley, for the next best, the second premium, $8 00

The third premium was not awarded.

To Oliver Tilton, for the best pigs, not less than two in number, nor less than four nor more than eight months old, the first premium, $10 00

There were none offered, that the committee considered entitled to the second premium.

The committee regret that they have not been able to make a more satisfactory report, upon the most important and useful stock of the farmer;—and hope that the "untiring zeal" of their fellow countryman, Gen. Coffin, to promote the best interests of his native land, and which has been so justly and deservedly noticed by the President of this society, may stimulate our brethren in the country, to more active exertions to improve their stock, and excite in them a spirit of emulation to excel at their annual exhibition.

The chairman of this report cannot close it, without first stating, that in deciding upon the premiums that were to be awarded, he requested the gentlemen, who were associated with him, and who are so generally and justly distinguished for their knowledge, experience and sound judgment, in the estimation of stock, to examine and decide the premiums by themselves, if they could agree, believing, that their decision must in that event give universal satisfaction, and that the gentlemen perfectly coincided in opinion, and were united in the premiums that are above stated. JOHN HEARD, Jr. *Chairman.*

Oct. 17, 1827.

REPORT VII.

The Committee on working oxen, having attended to the duties of their appointment, Report,

That seventeen yokes of oxen were entered for premiums, and of these, fourteen have been subjected to the examination of your Committee. Their strength and docility have been severely tested—The attention which seems to have been paid by all the competitors, to the selection, matching and training their oxen, bears honorable testimony to the interest which is taken in this important branch of our annual exhibition. After duly considering the claims of the respective owners, as it regards strength, docility, form and equality of match, your Committee have unanimously agreed to award the Society's premiums as follows—

To Luther Whiting of Sutton, for his 4 years old oxen, the first premium of $25

To Charles Clark of Framingham, for his yoke of 5 years old oxen, the second premium of 20

To Col. John Bigelow of Sherburn, for his yoke of 4 years old oxen, the second premium of 15

To Hiram White of Sutton, for his yoke of 4 years old oxen, the fourth premium of 12

To Silas Dudley of Sutton, for his yoke of 5 years old oxen, the fifth premium of 8

All which is respectfully submitted.

By order of the Committee,

E. PHINNEY, *Chairman.*

Brighton, Oct. 17, 1817.

The Committee on Agricultural Experiments, have carefully examined the communications received by the Secretary, since their report in October last, from the several competitors for premiums offered by the Trustees; and ask leave to submit for their consideration the following additional report, to wit.

That Mr. Nathan Grout, of Sherburne, in the county of Middlesex, is entitled to the premium of twenty dollars, for having raised, the present year, the greatest quantity of barley, being fifty-four bushels on an acre. Mr. Grout in his communication states as follows. "The soil is a dark rich loam, quite level, and naturally moist—in 1826, it was planted with Indian corn; about twenty loads of barn yard manure were in part spread over the land, and the residue put into the hills; the corn was hoed three times, and produced about forty bushels. Last spring it was ploughed as early as the ground would permit. There were then eight loads of barn yard manure spread upon the acre, and ploughed in. This ploughing was about eight or nine inches deep, being considerably deeper than I have been in the habit of ploughing my lands—it was then ploughed the third time with a horse plough. About 52 quarts of seed were sown upon the furrows, and harrowed in; it was harvested in July, and the product was 54 bushels of well cleaned, sound barley.—The quantity of seed was less than is usually sowed; but I am of the opinion that the crop would not have been increased by an additional quantity of seed. I attribute this unusual crop, in some considerable degree, to the pains that were taken to prepare the land in the best manner; and I am fully convinced that farmers in general would promote their interest, by bestowing more labour in preparing their tillage land for crops. The expense of cultivation, estimating labour at seventy-five cents per day, amounted to twenty dollars and sixty-one cents." Mr. Richard Adams,

Jr. of Newbury, exhibited satisfactory evidence of his having raised the present year, fifty bushels of barley on an acre.

That Payson Williams, Esq. of Fitzburgh, in the county of Worcester, is entitled to the premium of twenty dollars, for having raised the greatest quantity of potatoes on one acre; being five hundred and eighty-two bushels. Mr. Williams' statement is as follows: "As a claimant for your premium for the greatest quantity of potatoes produced from one acre the current year, I would state that my crop of 582 bushels of potatoes on the acre was grown the present season, on the same field which produced 559 bushels to the acre in 1826; as a statement of that crop, mode of culture, and kind of soil, was then before you, and can now be referred to, it will therefore be unnecessary to enter into such detail at this time.—The first part of last May forty-four cart loads of unfermented manure, principally from the sheep fold, were evenly spread, and immediately ploughed in, nine inches in depth, my practice for the last five years. The ground was then furrowed each way about three feet apart, and five cuttings placed at the intersections of the furrows, which were shallow. The quantity of seed was forty bushels, mostly the reds of La Plata. The planting was finished the 15th of May; the weeding was performed with the horse harrow, and hand hoe, so soon as the plants were about one inch above the ground. The second and last dressing was performed by furrowing between the rows each way, with the horse plough, and dressing down the hills with a hand hoe; at this time the vines were nine inches high, and beginning to bud—as the vines in a short time from the last hoeing, covered the ground, no other attention was necessary excepting occasionally pulling a few scattering weeds, till the crop was harvested, which was completed about the middle of October.—The expense of culture, estimating labour at sixty cents per day, and including the value

of the manure used, was fifty-four dollars and sixty cents." Mr. Leonard Hill, of East Bridgewater, raised the present year, on one acre and eight rods, 545 bushels of potatoes. Your Committee regret there not being a second premium offered by the Trustees, for the greatest quantity of potatoes over 500 bushels to the acre; they would most cheerfully have awarded the same to Mr. Hill, as a remuneration, in part, for his very laudable exertions.

Mr. Nathaniel Holden, of Shirley, in the county of Middlesex, raised 98 bushels of Indian corn, on one acre. The following is Mr. Holden's statement: "The quality of the land is a yellow loam. In 1826, about two thirds of the land was cultivated with Indian corn in rows, and manured at the rate of 20 loads to the acre, and the crop was large. In the autumn, in addition to this piece of land, one third of an acre of grass ground was ploughed, making in the whole one acre. In the spring of 1827, I split the hills, and carried on twelve cart loads of barn manure, spread and cross ploughed the whole, the ground was then furrowed by turning two back furrows about two feet apart; a space of four feet was then left for the plough to pass. In these furrows were put seventeen cart loads of manure, consisting of meadow mud, barn yard, hog yard, and green manure. It was planted about the 20th day of May. Four kernels of corn were put in the hills about twenty inches apart, taking care not to have the hills opposite to each other. The seed was the Brighton twelve rowed yellow corn; it was three times ploughed and hoed; the corn was harvested about the middle of October, and spread on a corn chamber floor, it was weighed the 13th day of December; the whole weight found to be 7351 lbs. At this time 71½ lbs. of ears made one bushel of shelled corn, making in the whole 102 bushels 3 pecks and 1 quart of shelled corn, weighing 58 lbs. to the bushel. The expense of cultivation, including the value of the manure, was twenty-seven dollars and eighty cents." The Trus-

tees having determined, as will be seen by their list of premiums published in January of the last year to consider seventy-five pounds of corn and cob as equivalent to one bushel of shelled corn, the quantity raised by Mr. Holden was only 98 bushels and 1-75 part of a bushel; and of course not entitled to the Society's premium.

Mr. Josiah Bass of Quincy, raised the past season, thirty-one bushels and one peck of winter rye, weighing fifty-nine pounds to the bushel, on one acre and thirty rods. And Mr. John Boynton, of Somerset, in the county of Bristol, raised 57½ bushels of oats on one acre and sixteen rods.—No premium has hitherto been offered by the Trustees for the raising of oats.

No claims were exhibited to your Committee for the premiums offered for the greatest quantity of wheat raised on one acre; nor for the greatest quantity of millet, carrots, beets, parsnips, mangel wurtzel, ruta baga, turnips, onions, cabbages, peas, and beans—nor for the greatest quantity of vegetables (grain, peas and beans excepted) raised for winter consumption, and not for sale—nor for the most effectual mode of extirpating the worm that attacks the locust tree—nor for a mode, hitherto unknown, to extirpate the borer that attacks the apple tree, which shall appear to the Trustees to be effectual, and cheaper than any mode now in use. The best mode for rearing, feeding, and fattening neat cattle—the utility, and comparative value of cobs of Indian corn, when used with or without the grain itself, ground or broken—nor for the greatest quantity of butter and cheese, made between the 15th day of May, and the 1st day of October, from not less than four cows; the quantity of butter and cheese and the number of cows to be taken into consideration. The past season having been so uncommonly propitious to vegetation, strong hopes were entertained by your Committee, that our brother farmers would by their experi-

ments in agriculture, have made more numerous claims for the premiums offered by the Trustees. All which is respectfully submitted.

By order of the Committee,

THOS. L. WINTHROP, *Chairman.*

Boston, Jan. 12th, 1828.

THE CULTURE OF SILK.

In a former number, we expressed very fully our views on this subject. We are happy to perceive that the subject has excited the attention, not only of congress, but of almost every state in the union. The expectation that the United States will in a few years be able to raise and produce its own silk, is in our opinion not visionary. Every part of our country, from Massachusetts to the extreme west, is well adapted to the growth of the mulberry tree. That the worm, which furnishes this material, will flourish in Massachusetts is settled by the best of all tests, experience. That the character and density of our population, and the habits of our females, who must be the chief agents in its production, are favourable to its successful cultivation, there can be no doubt. Although our extensive cotton manufactories employ a great number of our females, yet it is as true, that seven eighths of them can yet be spared to the raising of the silk worm; an employment, well adapted to their domestic character and habits. To produce this effect, it is only necessary that the more intelligent and better educated farmers in each town should set the example. It would not be advisable that this should be done on a great scale, so as to interfere with the general business of the farm. The mulberry once sown or planted requires no attention on the part of the male portion of the public. Young females, and chil-

dren from six years of age, are competent to gather the leaves and to tend the worms. Neither do we think that the attempt to manufacture the silk in private families will be economical. No manufacture requires more than this the division of labour. For the raiser of the silk worm the most profitable course would be to sell the cocoons, and as soon as a sufficient number of them shall be brought to market, there can be no doubt that purchasers will be found at a remunerating price. The congress of the United States have lately published a report of Mr. Secretary Rush, comprising a manual on the subject of producing silk, embracing every part of the process, from the rearing of the worm and its peculiar and specific food, to the perfection of the manufacture in all its beautiful forms and varieties.

We have received three copies of this work from our own representatives, the Hon. Messrs. Gorham, Bailey, and Everett. The limits of our publication will not permit us to publish it at large, but we recommend to the editor of the New England Farmer to publish the *whole*, by slow degrees, without interfering with the other objects of that valuable journal. The number of copies at the disposal of our own members of congress is too small to circulate the information as speedily and as extensively as may be desirable. We shall select for our present number the historical part, giving a brief but very interesting account of the history of the production of silk in other countries, as well as the efforts heretofore made to introduce the culture into *our own* country. We shall prefix the report of the committee of congress on this subject to our extracts. Justice requires us to say, that the public are greatly indebted to Mr. Secretary Rush for the indefatigable and judicious manner in which he has performed the duty required of him by congress.

HOUSE OF REPRESENTATIVES, MAY 2, 1826.

Mr. Van Rensselaer, from the Committee on Agriculture, to which the subject had been referred, made the following Report:

The Committee on Agriculture, to whom was referred the resolution of Mr. Miner, to enquire whether the cultivation of the mulberry tree and the breeding of silk worms, for the purpose of producing silk, be a subject worthy of Legislative attention; and should they think it to be so, that they obtain such information as may be in their power respecting the kind of mulberry most preferred, the best soil, climate, and mode of cultivation, the probable value of the culture, taking into view the capital employed, the labour and the product, together with such facts and opinions as they may think useful and proper; report:

That they have examined the subject attentively, and have taken such steps as they thought best calculated to obtain information which might be useful, and lead to satisfactory conclusions.

The facts developed in the course of their enquiries, tend to place the subject in an important point of view. It is an interesting fact, that the mulberry tree grows indigenously throughout the United States, and that silk may be raised with facility from the southern to the northern boundary of the union. Formerly, considerable quantities of silk were produced in Georgia. In 1766, more than twenty thousand pounds of cocoons were exported from thence to England. The production of the article was suspended, not from any difficulty experienced in the process, but from causes connected with the Revolution. Measures have recently been adopted at Savannah with a view to the renewal of the cultivation of the mulberry tree and breeding the silk worm. In Kentucky, the committee learn that sewing silk is now produced in considerable quantities, and of excellent quality. Many years ago the

attention of public spirited individuals in Pennsylvania was turned to the production of silk. The Persian mulberry was introduced into Bethlehem, Pennsylvania, by Bishop Ettwein, where it flourished, and still flourishes. Silk was produced without difficulty. In Chester and other of the southern counties of that state, the experiment was also made with success. The great demand and high price of bread stuffs, owing to the wars growing out of the French revolution, rendered the cultivation of grain so profitable for many years, that the mulberry was neglected. In 1779 two hundred pounds of sewing silk were made in the town of Mansfield, in Connecticut; and in 1810, according to the report of the marshal who took the census, the value of silk produced in Windham county was estimated at $27,373. The committee learn that the production of silk is still attended to and found profitable. Some beautiful specimens of sewing silk, the production of that state, have been exhibited to the committee. Of the fact, therefore, that the United States can produce silk for its own consumption, and even for exportation to the extent of foreign demand, there appears no reason to doubt. There are few persons, the committee believe, even the most intelligent of our citizens, (who have not turned their attention particularly to the subject,) who will not be surprised at the view presented by the following official statement of the value of silks imported into the United States the last five years:

Statement of the value of silk goods imported and exported in the years 1821 *to* 1825, *inclusive.*

Years.	Imported.	Exported.
1821	$4,486,924	$1,057,233
1822	6,480,928	1,016,262
1823	6,713,771	1,512,449
1824	7,203,344	1,816,325
1825	10,271,527	2,565,742
	$35,156,494	$7,968,011

What a bounty is paid by us to support the agriculturist and manufacturer of other nations, on articles which our country, with a few years of care, might supply! How important it is that the agriculturist should turn his attention to new objects of production, is very fully shown by the circumstance of the diminished and diminishing demand of bread stuffs abroad.

In 1817, the exports of bread stuffs amounted to	$20,374,000
In 1818, - - - - -	15,388,000
In 1824, - - - - -	6,799,246
In 1825, - - - - -	5,417,997

An importation of ten millions of dollars of silks; an export of five millions of bread stuffs! The facts speak the importance of the subject, and indicate the necessity that exists of awakening the slumbering agricultural resources of our country, by introducing new and profitable articles of production. Knowledge is power in agriculture no less than in politics; information is capital and the means of valuable improvement. The committee conceive that the first and most important measure to be taken is to acquire and circulate clear, distinct and precise information on these points: the relative value of the cultivation of the mulberry, and the production of silk, compared with other agricultural productions in the different sections of the union, capital and labour being considered. The kind of mulberry best suited to the object; the most advantageous mode of cultivation; the most approved manner of managing the silk worm, and an explanation of the process till the article is ready for market. The committee incline to the opinion that the best mode of raising silk will be for every farmer and planter to appropriate a small portion of ground, as for a fruit orchard, for raising the mulberry tree, calculating to produce as many worms as his own family will enable him to manage without increas-

ing his expenses, and without permitting it, until the experiment shall have been fully tried, to interfere with the regular course of his usual pursuits. A single acre planted with the mulberry will produce from 500 to 600 pounds raw silk, the value of which to the individual would richly compensate for the capital and labour employed, and the aggregate to the country be of great importance.

The fact is worthy of notice, that, notwithstanding the high price of land in Ireland, where a year's rent of land exceeds the price of the soil in many parts of our country, yet so valuable is the mulberry considered, that importations of trees from the Mediterranean have been made during the last year, for the purpose of producing silk. Your committee addressed inquiries to several intelligent gentlemen who were presumed competent to give them information upon the subject; and among the papers received in reply, they beg leave to present to the particular attention of the house a valuable memoir, replete with interesting facts and useful information, from Edmund C. Genet, Esq., and also several communications from other gentlemen, to whose attention the committee acknowledge their obligations. As the result of these inquiries, believing that knowledge on the subject is of the first importance, the committee submit the following resolution:

Resolved, That the secretary of the treasury cause to be prepared a well-digested manual, containing the best practical information that can be collected on the growth and manufacture of silk, adapted to the different parts of the union, containing such facts and observations in relation to the growth and manufacture of silk in other countries as may be useful, and that the same be laid before congress at the commencement of their next session.

HOUSE OF REPRESENTATIVES, FEBRUARY 11, 1828.

Mr. Van Rensselaer, from the Committee on Agriculture, to which the subject had been referred, made the following Report:

The committee on agriculture, to which was referred the report of the secretary of the treasury, made in pursuance of a resolution of the house of representatives, passed the eleventh of May 1826, directing the secretary to prepare a well-digested manual on the growth and manufacture of silk, have agreed to the following resolution, which they have instructed their chairman to submit to the house:

Resolved, That six thousand copies of said manual and report be printed for the use of the house.

HISTORY OF SILK.

The silk-worm, or, more properly, the silk-caterpillar, is a native of China. The people resident in the northern part of that country, called Seres, having been expelled by the Huns, in the ninety-third year of the Christian era, settled in Little Bucharia,* and were, for many centuries, the sole cultivators of the precious article, with which they supplied the rest of the world. The earliest mention of silk is in the translation of the Bible by Jerome, who enumerates it among the numerous articles, which were imported from Syria by the Phœnicians, those spirited merchants, and skilful manufacturers, who, although seated in a barren and narrow country, confined on one side by the sea, and by a range of mountains on the other, became a great naval and commercial power, which, for a very long period, secured to them a monopoly of trade by sea, and

* The identity of Bucharia with the country of the Seres, is established from the description of it by Ammianus Marcellinus, a writer of credit in the third century.

rendered their "merchants princes, and their traffickers the honourable of the earth."* The singular lustre and beauty of silk, and the delicate structure of the fabric, could not fail to prove highly attractive to mankind: and hence it constituted one of the articles which were brought from China by traders, who, in caravans, performed long and toilsome journeys through the trackless sands and deserts of Asia, to the different ports of Syria and Egypt, which successively became the depôts of commerce. For a long time, two hundred and forty-three days were consumed in these expeditions. Cosmas, himself a trader, speaks of the distance between China and Persia, as requiring one hundred and fifty days to perform the route. The cities of Turfan and Cashgar, were the rendezvous of these caravans.†

The Seres themselves never left home, being "a gentle race who shunned mankind."

The distance whence the article was brought, and the small quantities with which the world was supplied, necessarily caused the price to be far beyond the reach of any but the rich; and even when the Roman power extended over half the globe, as then known, this brilliant and ornamental article of dress was scarcely known to them. It is probable, that they first became acquainted with its real nature from the writings of Dionysius Periegetes, the geographer, who had been sent by Augustus to compile an account of the oriental regions, and who informed his countrymen that precious garments were manufactured by the Seres, from threads finer than those of the spider.‡ Among all the articles of elegance belonging to the luxurious Cleopatra, none seemed to excite their admi-

* Isaiah 23, 8.

† Ptolemy speaks of Comedæ, (the present Cashgar) as the "receptaculum eorum qui ad Seres negotii causa profisciuntur, penes Imaum Montis." Asia, tab: vii.

‡ Periegetes de situ orbis, 6 v, p. 752.

ration and astonishment, as the silk sails of her pleasure-barge, in which she visited them at Alexandria. For a long time after, it continued to be so scarce and dear, that, in the Roman dominions, it was confined to women of fortune. It was moreover deemed so effeminate an article, as to be unfit for the dress of men; and, in the reign of Tiberius, a law was passed, "that no man should dishonour himself by wearing silken garments."* Two hundred years subsequent to this date, the use of it constituted one of the many opprobrious charges which were made against the character of the Emperor Elagabulus. Even fifty years after, another emperor† refused his queen a garment of silk, by the reason of the high price it bore—its weight in gold.

For centuries, the Persians enjoyed a monopoly of the trade in silk, but, after they were subdued by Alexander, (300 years before Christ,) this valuable commodity was brought to Greece, and thence sent to Rome. The anxiety of the luxurious people of that nation, to trade with those from which the costly article was to be procured, induced the Emperor Marcus Antoninus to send Ambassadors to negotiate a more direct commercial intercourse with their country, than the subjects of Rome had yet been able to accomplish; and as the jealousy of the Parthians and Persians prevented the passage of all foreigners through their kingdoms to China, the Ambassadors were obliged to proceed by the tedious way of Egypt and India. Another was sent in the year 272, which led to more favourable arrangements, and a shorter route, viz: along the ranges of mountains, now called Hindookho, and Cuttore.‡ But the price of silk, for a long time, continued a source of regret,

* Ne Vestis Serica viros fœdaret. Tacitus, book 2d, chap. 33.

† Aurelian. Vopiscus in vitam Aureliani, c. 45, libra enim auri tunc libra serici fuit.

‡ See Rennel's map of the countries between the Ganges and the Caspian Sea.

and the article an object of increasing desire among the wealthy. Justinian made another attempt, shortly after he ascended the throne, to obtain it. He sent Julian as his Ambassador to the Christian King of Axuma, in Abyssinia, requesting, that, for the sake of their common religion, he would assist him in a war with Persia, and direct his subjects to purchase silks in India, in order to sell them to the Romans, whereby the Axumites would acquire great wealth, and the Romans would have the satisfaction of paying their gold into the hands of their friends, instead of enriching their Persian enemies. Julian also urged the Homerites in Arabia Felix, then under the vassalage of Axuma, to the same effect; and promised, on the part of the Emperor, to purchase silk from them, if, with their assistance, he could wrest the silk trade from the Persians, and they become the medium of intercourse with the country of the Seres. The Kings of both the countries promised to comply with the Emperor's request; but neither were able or willing to fulfil their engagements. The alleged causes for their non-compliance, were, some internal commotions among the Homerites, and the recall of Belisarius, who, with an army, to which the Arabian auxiliary troops were joined, protected the East from the invasions of the Persians.* This nation, by having the command of the land carriage from the country of the Seres, still enjoyed almost a monopoly, with respect to the western world, of Indian commodities; but more especially silk, with which it supplied remote nations at extravagant prices. From this distress, which was felt and lamented as a real misfortune, by the Senators of the Roman empire, they were released in a very extraordinary and unexpected manner. The preachers of the Nestorian doctrine, having been exiled by the persecuting spirit of the ecclesiastical government of Byzantium, fled to India. Their

* Procopius, p. 34.

patriarch, who resided in Persia, sent missions, and every where established convents and bishoprics. Two of his monks, who had been employed as missionaries in some of the Christian churches, which were established in different parts of India, having penetrated into the country of the Seres, had observed the labours of the silk worms, and become acquainted with the art of working their production into a variety of elegant fabrics. Aware of the anxiety of the Europeans on this subject, they repaired to Constantinople, and imparted to the Emperor Justinian the secret which had hitherto been so well preserved by the Seres, that Silk was produced by a species of worms, the eggs of which might be transported with safety, and propagated in his dominions. By the promise of a great reward, they were induced to return, and brought away a quantity of the silk worm's eggs, in the hollow of a cane, and conveyed them safely to Constantinople, about the year 555. The eggs were hatched in the proper season by the warmth of a manure heap, the worms were fed with the leaves of the mulberry tree, and their race propagated under the direction of the monks.* The insects, thus happily produced from this caneful of eggs, as if the little ark of the insect race, were the progenitors of all the silk worms of Europe, and the western parts of Asia. Vast numbers of these insects were soon reared in different parts of Greece, particularly in the Peloponnesus. The monks having also made themselves masters of the art of manufacturing silk, the business was conducted under the auspices of the Emperor, and for his exclusive benefit: but the imperial monopoly could not long continue, and mankind gradually became possessed of the precious insects, after the death of Justinian, in the year 565.† The people of the Peninsula, and of the cities of Athens and

* The monks procured the eggs from the colony of the Seres, in Little Bucharia.

† Procopius de Bello Gothico, lib. 12, cap. 17.

Thebes, enjoyed the profit of the culture and manufacture of silk without a European rival, for upwards of 400 years; and the Venetians, during the continuance of their commercial glory, distributed the products of their industry over the western parts of Europe. At length, Roger, the Norman King of Sicily, after his return from the second crusade, in order to anticipate an attack, which the Government of Byzantium was preparing against him, and to revenge the insult of the imprisonment of his Ambassadors, whom he sent to form a treaty and a matrimonial alliance with the Emperor Comnenus, made war upon Greece, in the year 1146, with a powerful naval and military force. Corcyra, the present Corfu, first yielded to the arms of the invaders, and the surrender of the other cities of Greece, and all the Morea, followed in speedy succession. The spoils were great; but what peculiarly distinguished this war from most others, which have no consequence than the exaltation of one individual, the depression of another, and the misery of thousands, was the capture of a great number of silk weavers, who were carried off, and settled in Palermo, the capital city of the conqueror. By the order of the King, the Grecian prisoners taught his Sicilian subjects to raise and feed silk worms, and to weave all the varieties of silk stuffs; and so well did they profit by the lessons of their instructors, that, in the course of twenty years, the silk manufacturers of Sicily were subjects of notice and of praise, by the historians of the age.*

The Saracens had, before this time, obtained the knowledge of the various operations of the silk manufacture, and spread it over their widely extended dominions. Lisbon and Almeria, the two Saracen cities of Spain, were especially famous for their silk fabrics; and the island of Majorca and Ivica paid their tribute to the Kings of Arra-

* Muratori Scriptor, Veter. vi. col. 668—Macpherson's Annals, vol. I, p. 322.

gon in silks. The Italian States soon after engaged in the silk culture and manufacture; and, in the year 1306, this business was so far advanced, as to yield a revenue to the State. In France, Louis the XI, and his son Charles the VIII, established a number of Italian workmen at Tours; but it is to Henry IV, that France is indebted, for placing the culture of silk and its manufacture upon a solid basis. Having put an end to the civil wars of the nation, he determined to give every possible encouragement to this important branch of industry, by recommending and enforcing the general planting of mulberry trees, and the rearing of silk worms. The merit of Henry, on this occasion, is increased by the fact, that his views and measures were in direct opposition to the advice of his favourite and wise minister Sully, who held the project in little consideration, as appears by his own memoirs, in which he candidly records the discussions which he had with the King on the subject. In the year 1455, mention is made of a company of silk women in England. In 1504, the manufacture of ribbons, laces, and girdles, was so considerable, as to be protected by a prohibitory statute. In 1561, Queen Elizabeth was presented with a pair of black knit silk stockings, with which she was so well pleased, that she never after wore any of another material. James I. was extremely solicitous to encourage the silk manufacture, and recommended it several times from the throne: and, in the year 1608, addressed a long letter on the subject, written with his own hand, to the Lord Lieutenants of every county in the kingdom, to whom mulberry plants and seeds were sent for distribution. He also had a book of instructions composed, on the rearing of the trees and the culture of silk, to promote the success of his project. The royal wishes do not appear to have been seconded by his subjects; but he had the satisfaction to see the broad silk manufactory introduced in the latter end of his reign. The revocation of the edict of Nantes in the year 1685,

which drove all the Protestants from France, permanently established the business in England; and the erection of the silk throwing mill of Sir Thomas Lombe at Derby, in the year 1719, greatly promoted it, by the rapid preparation of the raw material.

HISTORY OF SILK IN THE UNITED STATES.

The culture of silk first commenced in Virginia. Upon the settlement of that colony, it was deemed an object of the first importance; and the attention of the settlers was strongly directed to it by the British government, by which silk-worm eggs, white mulberry trees, and printed instructions, were sent over and distributed. King James the First, in the 20th year of his reign, having, doubtless, seen the defeat of his plan to encourage the silk culture at home, was induced to attempt it in Virginia; and, "having understood that the soil naturally yieldeth store of excellent mulberries," gave instructions to the Earl of Southampton, to urge the cultivation of silk in the colony, in preference to tobacco, "which brings with it many disorders and inconveniences." In obedience to the command, the Earl wrote an express letter on the subject, to the Governor and Council, in which he desired them to compel the colonists to plant mulberry trees, and also vines. Accordingly, "as early as the year 1623, the colonial assembly directed the planting of mulberry trees; and, in 1656, another act was passed, in which the culture of silk is described as the most profitable commodity for the country; and a penalty of ten pounds of tobacco is imposed upon every planter who should fail to plant, at least, ten mulberry trees for every hundred acres of land in his possession. In the same year a premium of 4,000 pounds

of tobacco* was given to a person as an inducement to remain in the country, and prosecute the trade in silk; and, in the next year, a premium of 10,000 pounds of tobacco was offered to any one who should export £200 worth of the raw material of silk. About the same time, 5,000 pounds of the same article was promised "to any one who should produce 1,000 pounds of wound silk in one year." The act of 1656, coercing the planting of the mulberry trees, was repealed, in the year 1658, but was revived two years after; and the system of rewards and penalties was steadily pursued until the year 1666, when it was determined that all statutory provisions were thereafter unnecessary, as the success of divers persons in the growth of silk and other manufactures "evidently demonstrated how beneficial the same would prove." Three years after, legislative encouragements were revived; but subsequently to the year 1669, the interference of government seems entirely to have ceased.† The renewal of the premiums after the act of the year 1658, was, doubtless, owing to the recommendation of Charles II.: for, in the year 1661, among the instructions given to Sir Wm. Berkeley, upon his reappointment as Governor, and while in England on a visit, the King recommended the cultivation of silk, and mentioned, as an inducement to the colonists to attend to his advice, "that he had formerly worn some of the silk of Virginia, which he found not inferior to that raised in other countries." This remark is probably the ground of the tradition mentioned by Beverly, that the King had worn a robe of Virginia silk at his coronation.‡

* In the early settlement of Virginia, tobacco was the circulating medium, the substitute for money, as sewing silk is, in part, at present in Windham county, Connecticut.

† Henning's Statutes of Virginia, vol. 1 & 2.—Letter to the Secretary of the Treasury in answer to the silk circular, from the Honourable John Tyler, late Governor of Virginia.

‡ Burke's Hist. Virginia, vol. 2, p. 125.

The revived encouragement given by the Colonial Legislature to the culture of silk, had the desired effect. Mulberry trees were generally planted, and the rearing of silk-worms formed a part of the regular business of many of the farmers. Major Walker, a member of the legislature, produced satisfactory evidence of his having 70,000 trees growing in the year 1664, and claimed the premium. Other claims of a like tenor were presented the same session.* The eastern part of the State abounds at present with white mulberry trees; and it is to be hoped, the people will see their interest in renewing the culture of silk.

Upon the settlement of Georgia, in 1732, the culture of silk was also contemplated as a principal object of attention, and lands were granted to settlers upon condition that they planted one hundred white mulberry trees on every ten acres, when cleared; and ten years were allowed for their cultivation. Trees, seed, and the eggs of silk-worms, were sent over by the trustees, to whom the management of the colony was committed. An Episcopal clergyman, and a native of Piedmont, were engaged to instruct the people in the art of rearing the worms and winding the silk. In order to keep alive the idea of the silk culture, and of the views of the Government respecting it, on one side of the public seal was a representation of silk-worms in their various stages, with this appropriate motto, "non sibi sed aliis."† By a manuscript volume of proceedings and accounts of the trustees, to which the writer has had access, it appears that the first parcel of silk which was received by the trustees, was in the year 1735, when eight pounds of raw silk were exported from Savannah to England. It was made into a piece, and presented to the queen.‡

* Burke, vol. 2, p. 241.

† M'Call's History of Georgia, vol. 1, p. 22, 29.

‡ "The trustees of Georgia waited on her majesty with some silk from Georgia, which had proved very good. It is to be wove into a piece for her

From this time, until the year 1750, there are entries of large parcels of raw silk received from Georgia, the produce of cocoons raised by the inhabitants, and bought from them, at established prices, by the agents of the trustees, who had it reeled off under their direction. In the year 1751, a public filature was erected, by order of the trustees. "The exports of silk, from the year 1750 to 1754, inclusive, amounted to $8,880. In the year 1757, one thousand and fifty pounds of raw silk were received at the filature. In the year 1758, this building was consumed by fire, with a quantity of silk, and 7,040 pounds of cocoons; but another was erected. In the year 1759, the colony exported upwards of 10,000 weight of raw silk, which sold two or three shillings higher per pound, than that of any other country."* According to an official statement of William Brown, Controller of the Customs of Savannah, 8,829 pounds of raw silk were exported between the year 1755 and 1772, inclusive.† The last parcel brought for sale to Savannah, was in the year 1790, when upwards of two hundred weight were purchased for exportation, at 18*s*. and 26*s*. per pound.‡

majesty."—Gentlemen's Mag. Vol. 5, p. 448. The following entry appears in the manuscript book of the trustees, under date, 1736: "The raw silk from Georgia, organzined by Sir Thomas Lombe, was made into a piece of silk, and presented to the queen." Under date 1733, is a charge "for making a rich brocade, and dying the silk from Georgia, 26*l*."

* M'Call's Hist. Georgia, vol. 1, p. 251.

† It will be seen that this statement differs from that of Mr. M'Call. It first appeared in B. Roman's account of Florida, and afterwards in Aikin's Pennsylvania Magazine, for July 1775. An opinion of the quality of the Georgia silk, may be formed from the following document:

"A paper was laid before the Commissioners for Trade and Plantations, by about forty eminent silk throwsters and weavers, declaring, that, having examined a parcel of about 300 pounds weight of Georgia raw silk, imported in February last, they found the nature and texture of it truly good, the colour beautiful, the thread even, and clean as the best Piedmont, and will be worked with less waste than China silk."—London Magazine for 1755.

‡ The late Charles Harris, Esq.: letter to the Secretary of the Treasury.

Some attention was also paid, in early times, to the culture of silk in South Carolina; and the writer has been informed, that, during a certain period, it was a fashionable occupation. The ladies sent the raw silk produced by them to England, and had it manufactured. "In the year 1755, Mrs. Pinckney, the same lady who, about ten years before, had introduced the indigo plant into South Carolina, took with her to England a quantity of excellent silk, which she had raised and spun in the vicinity of Charleston, sufficient to make three complete dresses: one of them was presented to the princess dowager of Wales, and another to Lord Chesterfield. They were allowed to be equal to any silk ever imported. The third dress, now (1809) in Charleston, in the possession of her daughter, Mrs. Horry, is remarkable for its beauty, firmness, and strength."* The quantity of raw silk exported as merchandise was small; for, during six years, only 251 lbs. were entered at the custom-house.† The quality of it was excellent: according to the certificate of Sir Thomas Lombe, the eminent silk manufacturer, it had as much strength and beauty as the silk of Italy.‡ At New Bordeaux, a French settlement, 70 miles above Augusta, the people supplied much of the high country with sewing silk, during the war of the Revolution.§

In the year 1771, the cultivation of silk began in Pennsylvania and New Jersey, and continued with spirit for several years. The subject had been frequently mentioned in the American Philosophical Society, as one of those useful designs which it was proper for them to promote; but they were induced to enter into a final resolution on it, in consequence of a letter being laid before them on the

* Ramsay's History of South Carolina, vol. 1, p. 221.

† Viz.: in the years 1742, 1748, 1749, 1750, 1753, 1755.—Dodsley's Annual Register, 1761.

‡ An Impartial Enquiry into the State of Georgia.—London, 1741, p. 79.

§ Thomas McCall, Esquire: answer to the silk circular.

5th January 1770, from Doctor Franklin, who was then in London as Agent of the Colony, and in answer to one which had been written to him on the same subject by the late Doctor Cadwallader Evans. In this letter from Dr. Franklin, he recommended the culture of silk to his countrymen, and advised the establishment of a public filature in Philadelphia, for winding the cocoons. He also sent to the Society a copy of the work by the Abbe Sauvage, on the rearing of silk worms. A committee having been appointed by the Society to frame a plan for promoting the culture of silk, and to prepare an address to the Legislature, praying for public encouragement of the design, they proposed to raise a fund, by subscription, for the purchase of cocoons, to establish a filature, and to offer for public sale all the silk purchased and wound off at the filature; the produce thereof to be duly accounted for, and to remain in the stock for carrying on the design. A subscription among the citizens was immediately set on foot, and the sum of £875 14*s.* obtained the first year;* eggs and white mulberry trees were imported, and a digest of instructions composed, published and distributed. Until the white mulberry trees were fit to allow of their leaves being plucked, the worms were fed upon the leaves from the native trees, and were found to agree perfectly well with them, and to yield excellent silk. It is believed that all the silk produced during the continuance of the Society, was from food furnished by native trees. A spirit for the silk culture was excited among the citizens, and

* The loss of the minutes of the Society prevents our knowing the amount subscribed in subsequent years. It is a proof of the anxiety of the British Government, in respect to the silk culture in the Colonies, that, in the year 1769, an act was passed for the '*further*' encouragement of the growth of silk in North America, granting 25*l.* for every 100*l.* value of raw silk raised for the next seven years, and smaller bounties during the two following periods of seven years. But no mention is made of this act by Dr. Franklin in his letter, nor does it appear that any premium was claimed by the Society in consequence of it.

many garments are still possessed by families which were made from silk raised by their forefathers. The war of the Revolution put an end to the patriotic association, and suspended, in a great measure, the silk culture—there being no longer a sale for cocoons; but many persons continued their attention to it, and others resumed it after the termination of the war.

The knowledge of the proper mode of rearing silk worms, and of winding the silk, was greatly promoted by the publication of a paper on those subjects, in the 2d volume of Transactions of the American Philosophical Society of Philadelphia, which the late Doctor John Morgan procured from Italy, through a silk mercantile house in London.* During the last three years, a spirit has been revived and diffused on the subject, and promises to increase; and there can be no hesitation in saying, that a ready sale for cocoons is alone wanting, to establish the silk culture as a regular employment in several States of the Union. It was the want of this market which defeated, in a great degree, the patriotic attempt of Mr. Nathaniel Aspinwall, of Connecticut, about the year 1790, to revive the silk culture in Pennsylvania, New-York, and New Jersey. But his memory deserves to be held in everlasting and grateful remembrance, for the thousands of white mulberry trees which he planted in those States, and for the commendable zeal he exhibited in the cause.

In Connecticut, attention to the culture of silk commenced about the year 1760, by the introduction of the white mulberry tree, and eggs of the silk worms, into the county of Windham, and town of Mansfield, from Long Island, New-York, by Mr. N. Aspinwall, who had there planted a large nursery. He also planted an extensive nursery of the trees in New Haven, and was active in ob-

* This excellent paper has been copied in all the British and Scotch Encyclopædias, and was reprinted in a pamphlet, at Windham, Connecticut, in the year 1792.

taining of the Legislature of Connecticut, an act granting a bounty for planting trees; a measure in which he was warmly supported by the patriotic and learned Dr. Ezra Styles. The premium was ten shillings for every hundred trees which should be planted and preserved in a thrifty condition, for three years; and three pence per ounce for all raw silk, which the owners of trees should produce from cocoons of their own raising within the State. After the public encouragement for raising trees was found unnecessary, a small bounty on raw silk, manufactured within the State, was continued some time longer. A statute continues in force, requiring sewing silk to consist of twenty threads, each two yards long.*

It would be an act of injustice to omit noticing the generous encouragement to the cultivation of silk in the American Colonies, which was given by the patriotic Society in London, for "the Promotion of Arts," &c. From the year 1755 to 1772, several hundred pounds sterling were paid to various persons in Georgia, South Carolina, and Connecticut, in consequence of premiums offered by the Society, for planting mulberry trees, and for cocoons and raw silk.†

After the war of the Revolution, the business was renewed, and gradually extended; and it is recorded, that, in the year 1789, two hundred pounds weight of raw silk were made in the single town of Mansfield, in Windham, Connecticut.‡ In the year 1810, the value of the sewing silk and raw silk, made in the three counties of New London, Windham, and Tolland, was estimated, by the United States' Marshal, at $28,503;§ but the value of the domes-

* Governor's Wolcot's answer to the silk circular.

† The particulars are not inserted in the transactions of the society, but may be seen in Bayley's Advancement of the Arts, London, 1772, and in Dossie's Memoirs of Agriculture, vol. 3.

‡ Columbian Magazine, Philadelphia, 4, p. 61.

§ Statement of the arts and manufactures of the United States for the year 1810. By Tench Coxe.

tic fabrics made from the refuse silk, and worn in those counties, was not taken into consideration. They may be fairly estimated at half of the above sum. In the year 1825, enquiries were made by the writer, in Windham county, as to the increased attention to the silk culture there, and it was found that the value of the silk, and of the domestic fabrics manufactured in that county, was double that of the year 1810. It was also found, that sewing silk was part of the circulating medium, and that it was readily exchanged at the stores for other articles, upon terms which were satisfactory to both parties, and that the balance of the account, when in favour of the seller, was paid in silver. The only machines for making the sewing silk, are the common domestic small and large wheels, but practice supplies the defects of these imperfect implements; with better machinery, sewing silk of a superior quality would be made. At present, "three-fourths of the families in Mansfield are engaged in raising silk, and make, annually, from 5 to 10, 20 and 50 pounds in a family, and one or two have made, each, 100 pounds in a season. It is believed that there are annually made in Mansfield, and the vicinity, from three to four tons."*

The farmers consider the amount received for their sewing silk as so much clear gain, as the business does not interfere with the regular farm work of the men, or the domestic duties of the females, upon whom, with the aged and youthful members of the family, the care of the worms, and the making of the sewing silk chiefly devolves. It is known, also, that, in the other New England States, Maine excepted, more or less attention to the silk culture is given.

During the late war with England, Samuel Chidsey, of Cayuga county, New-York, sold sewing silk to the amount

* Z. Storrs, Esq. of Mansfield: answer to the silk circular.

of $600 a year. Mr. C. introduced the white mulberry tree in the town of Scipio, on its first settlement.* Silk was, also, formerly raised by the French inhabitants, in the country now the State of Illinois, but to what extent is not known.†

The cultivation of silk has commenced in the States of Ohio and Kentucky, and there is every reason to believe that it will extend. The first mentioned State contains a great number of citizens who formerly resided in the silk-growing districts of Connecticut and Massachusetts, and who will doubtless see their interest in renewing a branch of business, from which they formerly derived so much profit. In the latter State, it is chiefly confined to those industrious people, the United Brethren, whose steady, persevering labours and intelligence are the surest guaranties of success.

RAW POTATOES BAD FOR MILCH COWS.

The following article taken from a foreign Magazine, has been copied lately into the American Farmer and the New England Farmer.

"Many farmers are in the habit of giving raw potatoes to all kinds of stock; but they are of a watery and griping nature, and accidents have frequently happened from their use before the cattle have been accustomed to them. For milch cows they are very bad, purging them, and rendering their milk too thin and poor, even for suckling. If given raw to fatten oxen, good hay and bean meal should be allowed to counteract the watery quality of the roots. There is, however, much difference in the

* Mr. David Thomas: letter in answer to the silk circular.

† Governor Coles: letter in answer to do.

nature of potatoes, and the mealy approach nearest to the nature of corn, the yellow afford the strongest nutriment." —*Scotch Magazine.*

Nothing can be of greater importance to every farmer, than a correct knowledge of the comparative merits of the different varieties of food for his cattle. Of course nothing can be more pernicious, than throwing out loose and general censures of any particular species of food, particularly of those most easily raised, and therefore the cheapest. I certainly am not disposed to set up my authority against opinions advanced in established works. But there is no treason in stating facts, in relating careful and long continued experiments. For nearly twenty years, I have been in the practice of allowing my milch cows from November till they go to grass about three pecks of roots a day with good English, or upland hay to their full content. I first commence with the beet, because it is most perishable; carrots then follow, and from February till May, they have raw potatoes. In commencing with the potatoes, they will be for a few days relaxed; so they will, often, to as great a degree, with Indian meal; after a little use, they return to their natural state of body, and are always in high condition when they are turned out to grass; perhaps they are too fat.

Potatoes, then, cannot be a watery griping food; my milk is as rich as the milk of cows not thus managed. My cows have been almost always raised by myself, from my own stock, and I usually keep them till they are aged. If the proposition stated in the extract at the head of these remarks had been true, or nearly true, or had any degree of soundness in it, it seems to me impossible, that I should never have remarked the ill effects stated.

Some farmers may consider these remarks as of less weight, as coming from a man not bred a farmer. Some may suppose that I trust the eyes of others, and am deceived. To these possible objections, I reply, that my

cows are objects of special regard, as furnishing me with one of the most valuable luxuries; that I attend to them personally and carefully, and I can see no good reason why an attention of 20 years should not enable me to form as correct an opinion as a thorough bred farmer. I am not, however, without support from persons of that description. An intelligent practical farmer, whose dairy is in such repute that he obtains from 31 to 37 cents a pound for his butter, assured me, that he always gave his cows in winter the long red potatoe in a raw state, and that he estimated two bushels of that potatoe for his cows as equal to one bushel of corn.

JOHN LOWELL.

ONE OF THE DISEASES OF THE PEACH TREE.

A DISEASE has this year reappeared in my peach trees, which must be very familiar to every cultivator of that tree. About the latter end of May, the leaves, or many of them, are covered with blotches of a yellow and reddish colour.

These leaves after a few days fall, and where the leaves of any tree are generally so affected, the fruit ceases to grow, and falls also. This is not a new disease: when I was a youth, more than 40 years since, the peach trees were, for many successive years, so affected. The disease however afterwards disappeared for several years. When I took possession of the estate I now occupy, about 22 years since, all my peach trees became affected with this complaint, and so fatal was it, that from 1806 to 1820, I never had a tolerable crop of this delicious fruit. In all the former visitations of this disease, it was generally attributed to cold blasting easterly winds and storms; by

some it was ascribed to a diseased state of the fluids, men always preferring to trace analogies between the animal and vegetable kingdoms, rather than to seek with care the more natural and simple causes. After the discovery of the worm at the root, now ascertained by Professor Say to be the larva of an insect, which he has called "ægeria exitiosa" or the destructive ægeria, I supposed that this might be the cause. On its reappearance this year on my trees, I was resolved, if possible, to detect the cause of the disease. As an approximation to it, I first attempted to settle my opinion by negative proofs. I sought to discover what could not be the causes of the disease. I soon satisfied myself, that it could not be occasioned by blighting cold winds or storms. My reasons were, that these occur in every season, yet I have not seen a blotched or diseased leaf on my trees for seven years, before the present year. The effect of cold winds and storms, would equally affect every tree and every leaf; but I found that some trees, under equally great exposure, as delicate and even more so, were entirely free from disease; and on all the trees, many leaves were perfectly healthy. I remarked that old trees which were feeble were more affected, than the strong and vigorous. The most delicate shoots often escaped wholly; I was therefore satisfied that it could not be owing to the season.

I examined to ascertain, whether the worm at the root could be the cause. I found no worms at the roots of any of the trees, having for several years past annually destroyed them.

Could it be general ill health? The trees were in all other respects in the most healthy condition. The same objections applied to this supposed cause as to the first.

I then resorted to the most natural cause; the most common, the cause, whose effects, in other trees most nearly correspond with these appearances, the bite of an

insect. The bites of insects produce an almost infinite variety of appearances. The aphis on the peach tree curls both the leaf and the stalk in a very remarkable manner. I searched the diseased leaves but could perceive no insect. There is no larva within the diseased and blotched leaves. Might they not however, seek these leaves for their own food, and not as a nidus, or nest for their young? Certainly they might, for so does the aphis. On pursuing my investigation, I discovered clearly and unquestionably the cause. The insect is found, sometimes one, two, and often ten, in the *unexpanded* leaves when they are about one inch long. The leaf is then folded back so as to conceal and protect the *future upper surface*. On the mid rib of this leaf, and *there only*, will be found a small insect or insects, of a *very light* green colour, without wings, with 6 feet on the breast or thorax only, the abdomen ribbed. Being no entomologist, I describe only what I clearly saw. It is an exceedingly active insect. It must quit the leaf when it expands, as it is never found on an expanded one. It probably goes from the more advanced to the tender leaves as the aphis certainly does. I could see nothing to lead me to believe, that there are constantly increasing generations of this insect as in the aphis, and in the scourge of our vines. Unhappily its secure situation affords us no remedy by external application. In *young trees*, and early in the season, the careful cultivator might do something by removing the diseased leaves, before they expand, and thus check the future progress of the insect.

J. LOWELL.

Roxbury, May 31, 1828.

June 2d. Postcript. Since writing the above, I beg leave to say, that I have since found the insect on the fully expanded leaves to the number of ten or more. I think it may be worth inquiry whether the removal of the

diseased leaves from the ground may not be of use in checking the insect another year. The last fall, I removed several peach trees from the nursery, and planted them out. The trees in the nursery are filled with insects, *those removed* to other ground, not affected. This would look as if the ground was the winter residence of these insects. They are so small that many persons might overlook them, without the aid of magnifying glasses. Yet they are so numerous and so active, as to be quite competent to the work of destruction, which we perceive.

REVIEW.

Nature and Reason Harmonized in the Practice of Husbandry. By the late JOHN LORAIN. *With an Alphabetical Index.* Philadelphia: H. C. Cary and Lea. 1825.

ALTHOUGH this work has been before the public several years, and has been extensively circulated, and extracts made from it in various publications, yet no regular notice has been taken of it in any periodical publication. The professed literary and scientific reviewers probably have thought, that agriculture is either beneath or beyond the sphere of their publications. This is not extraordinary; for until within a few years there have been no readers among the agricultural class. They have themselves done much to discourage persons, who felt disposed to enlighten them, as to the progress of their art in other countries, and even in their own. Deane, and Bordley, and Taylor, have had few readers among the practical farmers, except the educated men in the southern states. More recently, farmers have been willing to read, and some of them even solicitous to obtain the Journals of the Massachusetts Agricultural Society. But still the progress was very slow,

until Mr. Skinner of Baltimore, with a boldness and energy which entitles him to the public gratitude, undertook to publish a weekly paper, devoted to agriculture principally. His merited success proved that agricultural information was in truth a desideratum; that there was an effective demand for it, and that the failure of the more formal and formidable works on agriculture was owing to other causes than the want of interest in the subject. The expense of the books (oftentimes,) the parade of learning, the too great disposition to theorize, the unfortunate introduction of methods of culture, which were tried and failed, the too credulous character of the writers who inserted from European authorities processes, either not adapted to our climate or not suited to the habits of our farmers; these causes, combined with the stubborn resolution not to be instructed by educated men, have impeded the circulation of the few treatises which have been published in our country. The establishment of the New England Farmer under the auspices of Mr. Fessenden, at the same time an educated man, and from his infancy familiar with the practice of agriculture, well acquainted with the sciences connected with that art, and modest, unassuming and candid, has wrought a great change in public sentiment; and the enquiry for and sale of works devoted to agriculture and horticulture, afford the most unequivocal proofs that farmers no longer disdain to seek the light and information which other countries and other states of our own can throw upon their art.

Of the works which have appeared in our country of American origin, that of Mr. Lorain unquestionably stands at the head. It is not only more original, contains more new thoughts, but it is much more extensive, and embraces a greater variety of topics than any other American work. We could wish that we had a more intimate knowledge of Mr. Lorain's history, not because the real merit of his work would be affected by it, but because his influence

and the weight of his opinions with the public would be much greater, if we had the means of showing what his opportunities of information were.

We can, therefore, only state what we gather from his work. That he was originally a slaveholder, and therefore conversant with the modes of cultivation in the states in which that species of labour is employed; that from Maryland he removed to Pennsylvania, and cultivated a farm not far from the metropolis, and finally removed to a comparatively new farm in the interior. His opportunities were therefore great, and it will appear in our examination that he did not fail of improving them. It would seem also, that he was intimately acquainted with the European methods of cultivation, whether from visiting Europe (as we presume he did) or not, we cannot say. He was conversant with chemistry and its application to agriculture. Such were his means. From the character of his work, for we have had no personal knowledge of him, we have no hesitation to say that he was a man of strong and powerful sense, capable of expressing his thoughts with great distinctness and force; his style possesses an energy seldom exhibited on such subjects, and in no degree inferior to that of Col. Taylor of Virginia, and of Cobbet. These are his advantages. His disadvantages or defects are, that he had a most invincible disposition to theorize, and like all other theorists he never sees any thing but in the precise light suited to his theory. He is delighted when he can arraign the opinions of Sir Humphrey Davy. He seems to consider *him* a champion worthy of his attack, and that to accomplish a victory over *one* of *his* opinions, is an achievement, which justifies his desertion of the great purposes of his work. Indeed, the very title page of his book puts forth his pretensions to the rank of a *discoverer*. "Nature and Reason Harmonized," necessarily denotes, that all other preceding writers have placed them in opposition or conflict.

There is another fault in Mr. Lorain's work, which is less pardonable than any other. There is an acrimonious spirit, a disposition to injure the character and feelings of other distinguished cultivators, which cannot be readily excused. His incessant sneers at the venerable judge Peters, are proofs of an ungovernable temper or of personal pique. Those who read this work without any knowledge of the character, public services, experience and learning of the President of the Pennsylvania Agricultural Society, would form very unjust and improper impressions of his character. These are great and lamentable defects. There was no occasion for Mr. Lorain to build up his own reputation at the expense of others, and his want of candour necessarily impairs the public confidence in his *own* statements, for when a man is under the operation of strong excitement, you can never feel a confidence that it will not influence even his statement of facts.

In reviewing briefly (as the limits of our present number will compel us to do) Mr. Lorain's work, we shall not take the course adopted in other reviews, where the principal object of the reviewer is to display his own talents. Our course will be to give our readers some insight into Mr. Lorain's work. We shall give a brief synopsis of it, simply adding without much reasoning our own opinion of his theories, whether favourable or unfavourable. To attempt to disprove what we think unsound, or to support what we deem correct, by argument or facts, would require a volume at least as large as his own.

His first book is on the most important of all agricultural subjects, manures and vegetation. His first chapter is on lime in its caustic state, and on the carbonate of lime, limestone, marl, and powdered limestone. This chapter introduces his own peculiar (so far as we know) doctrine of the injurious effects of caustic lime. The whole chapter is devoted to the maintenance of that proposition. The basis of his proposition is, that lime is a stimulating ma-

nure, promoting vegetation, but in doing this it exhausts the soil. But we ask, in what manner? Simply by promoting the decomposition of the animal and vegetable matter in the soil, and by *increasing* the amount of the crops. But if a fair proportion of the produce of these crops is returned to the soil in the shape of the dung of the animals which consume the crop, this effect will not be produced. The great object of the writer seems to be, to bring into disrepute the practice of all the European nations, and of some of the most eminent agriculturists in our own country of using lime in its caustic state. The British farmers, who have limestone at easy command, incur the expense of burning it before they apply it to the soil. This practice Mr. Lorain would seem to condemn; he prefers the powdered limestone uncalcined. His reason for it seems to be, that this resembles more nearly the operations of nature, which distribute the alkaline principle more slowly. He, however, cites no experiments to show, that uncalcined limestone in a pulverized state does in fact produce any important effects. The objection in our minds to this theory (for it is only such) is, that the quantity of uncalcined lime must be much greater, its transport to the farm more expensive, and, we should suppose, the process of reducing it to powder would be more troublesome. He admits that the action of caustic lime is more rapid, and, as we should infer, more useful for the immediate purposes of the farmer. If mixed with the soil and manure it decomposes it more speedily for the benefit of the present crop, and, as to its exhausting character, it can only arise from its producing greater crops. No person ever considered lime as adding materially to the fertility of the soil itself. It is a very different question, whether the application of lime to compost heaps is beneficial or hurtful. This topic Mr. Lorain discusses in another place, and it is a question of very different nature. It may, perhaps, be highly inexpedient to hasten the decom-

position of manure *before* it is applied to the crop, and yet be very useful to employ the same power for the advancement and increased production of an existing crop. The English farmers often apply from 200 to 300 bushels of calcined lime to a single crop of wheat, and they calculate upon a full remuneration from that crop. The effects of that lime they find to endure for seven years. That is to say, they find its effects in hastening the decomposition of manure to last for that period. But no English writer ever dreamt of applying no animal and vegetable manure in the intermediate time. They, therefore, experience no exhaustion.

Mr. Lorain's second chapter on gypsum is principally devoted to the overthrow of Sir Humphrey Davy's solution of the *manner* in which gypsum operates. Its effects are undoubtedly astonishing, and it is not extraordinary that the *cause* of these effects should have engaged the earnest attention of philosophical minds. To the farmer it is indeed unimportant, whether the effect is produced by one cause or another. The early theory was, that gypsum operated *solely* as a stimulant, and not directly as food to the plant. To explain the mode of operation on this principle, the advocates of this hypothesis contended that gypsum hastened the putrefactive process, and rapidly decomposed animal and vegetable substances, and fitted them to be the aliment of plants. The fact which is all that to this hour is *certainly* known, was too well proved to be doubted by *any* theorist. When Sir Humphrey Davy brought his powerful mind and extensive knowledge to this question, he was unable to account for the effects on the received theory. He contended that it was physically by any known laws impossible, that one or even two bushels of gypsum could materially hasten the decomposition of animal and vegetable substances contained in an acre of land. This was the great strong-hold of the advocates for the stimulating system. He began by the truly philosophi-

cal method of ascertaining, whether gypsum possessed the assumed power of acting on animal substances in *any way*. He tried the effects of gypsum on two pieces of veal; the one was covered with gypsum, the other was not treated with it. He actually found that the decomposition was as rapid in the veal *not* submitted to the action of gypsum as in that which was. The same experiment was repeated on pigeons' dung, with the same result. This convinced him that the existing theory was unsound, and it seems to us very difficult to resist the evidence. If caustic lime had thus been applied, we all know that the result would have been the reverse. Sir Humphrey then turned his attention to other causes of the operation of gypsum. He found that gypsum operated only on *certain* plants, while it was wholly inert and inefficient on others. This induced him to analyze the few plants on which gypsum produced its extraordinary effects, and he found that these particular plants yielded an unusual quantity of gypsum. Hence he inferred that these plants required a supply of this compound for their healthy and vigorous production. He was too much of a practical philosopher to go further, and to show *how* these particular plants took up the gypsum. These are secrets of nature, which stop the enquiry of truly sensible minds. But that his conclusion was more philosophical and rational, we think can scarcely be questioned. Mr. Lorain has made, to our minds, but an imperfect attack on this theory. He has suggested that though the gypsum did *not* act in *any* manner on the substances submitted to it, yet he contends that it *may* operate on the earth and manure, where it is combined with moderate moisture and with substances half decomposed already. We admit that there is both force and ingenuity in this suggestion. It is true, that substances in a diluted state will produce effects directly opposite to the effects of the same substances in a more concentrated form. Sir Humphrey Davy says, that salt in very small quantities

hastens decomposition of animal substances, while in greater masses it checks it. Our complaint against Mr. Lorain is, first, that he attacks Judge Peters for holding the opinion, that plaster in *small* quantities accelerated decomposition, while in *larger* proportions it produced not *any effect*. He attacks Sir Humphrey Davy on the *very* ground, which he pronounces to be contradictory and absurd on the part of Judge Peters. That is, he maintains that though Sir Humphrey Davy's experiment on the direct application of plaster to veal failed, yet it might be owing to its great quantity; and yet he denies to Judge Peters the benefit of his own principle. We have been thus minute on this subject, because we think it shows that Mr. Lorain is not in all cases a sure guide; but our own opinion is, that the operation of plaster and indeed of all manures is, as yet, very imperfectly understood; that the science of analysis of all substances is a very distinct one from their *operation* on *animal* and *vegetable life*, and that though investigations of this sort may be amusing to curious minds, yet other cooler and safer intellects will forever recollect, that there are limits to human knowledge which it is not very useful to pass, most certainly on subjects so *practical* as this. Indeed, we are unable to perceive any direct use in ascertaining, whether gypsum operates as a stimulus or as nutritive food. The question to what soils, or to what plants it is usefully applied, is indeed a very interesting question; and before we quit it, we shall repeat what we have often said, that it is a great mistake to suppose that gypsum is not a powerful agent on the sea-coast: on silicious and sandy soils, and all generally light soils, we know from repeated experiments that its effects on clover and lucerne are very great near the sea. We have now a crop of clover on *pure sand* well plastered, which is equal to any crop on the most fertile soils. Shall we be told that it will exhaust it? Exhaust sand? Exhaust what had no fertilizing matter in it? Be it so. A very little

manure will restore it to a state in which the plaster will *again* produce its extraordinary effects.

Mr. Lorain's chapter III. is, in the main, full of rational matter. He reasons in general very philosophically, by which we mean that his reasoning is founded on undoubted *facts*. The general scope of it is to show, that nature furnishes the means of fertility by its own unaided processes; that the growth and decay of vegetable life tend to enrich the soil. His remarks upon the value of weeds is very sound. We should carry the doctrine further than he does. Weeds are destructive of the crops which are useful to man. We call them *weeds* very properly, because they are rejected instinctively by most animals. Yet their use to man is very great. If a farmer found no plants in his cultivated grounds, which were noxious to the plants valuable to himself for his own food, or for that of the profitable domestic animals, he would never put a plough into the earth, or even use a hoe, except for the purpose of putting the seed into the earth. Weeds compel him to stir the ground. By this necessary, and we may add compulsory process, he reduces the earth to a fine tilth, easily permeable to water and dew, and highly favourable to the extension of the delicate terminal fibres of the roots of plants, which, from their delicacy and softness, are best calculated to receive and transmit nutriment. Indeed, the harder parts of the roots probably exert very little influence on the growth of plants other than that of sustaining the plant in its erect position. The rupture of these roots by the plough and the hoe, compels the plant by a law of self-preservation to send out an increased quantity of these tender shoots, which we all know by experience to be highly favourable to the growth of plants. We shall, however, reserve for another occasion, when we shall be compelled to examine some unphilosophical notions of Mr. Lorain on this particular topic, our further views on this subject. We repeat that the general views

presented by Mr. Lorain are in our opinion very sound, though not new. So far as our limited reading has extended, the same ideas have been suggested and the same reasoning applied by almost all writers on this subject. Mr. Lorain has not in this connexion sufficiently exalted the *use* of weeds as a *manure*. The quantity of weeds, in comparison to the crop to be raised, is immense. Although it would not be good policy to suffer the weeds to grow to a size which would render them the most valuable possible addition to the manure, because they would stifle the intended crop, yet it is believed that the amount of vegetable matter turned in by ploughing and hoeing root crops, is much greater than is generally supposed. On the whole, we may safely say that weeds are a most valuable part of the economy of nature, compelling man to do that which is of essential value to his crops, and rewarding him for that labour, not only by directly stimulating the growth of the crop by *mechanical* means, but by adding to the soil substances rapidly decomposable, and furnishing new food to his crops without essentially impairing the strength of his artificial manures. The effects of the operation of the plough and hoe are so obvious to every careless observer, that no man can and happily no man (but the sluggish) *pretends* to doubt it.

In a chapter in which we find so much to commend, it is not a desirable office to be obliged to find fault. Yet as the defects we perceive are connected with the whole work, as they serve to explain some of the singular eccentricities of other and more material parts of it, we feel obliged to take notice of them. We are surprised to find Mr. Lorain attributing to the death of animalculæ, by which he seems to mean obscure insects, such an important agency in adding to the *animal* matter in the soil. It *may* be so, and we are not able to show that it is *not* so, neither was Mr. Lorain able to demonstrate that *it was so*. That beetles, and aphises, and caterpillars, and grasshop-

pers *die*, is unquestionably true, but that the whole race of insects do in fact materially increase the fertility of the soil is not susceptible of proof, and seems to our minds to be a more curious than sound proposition. That they have their use in the economy of nature, no man who sees the wonderful harmony of the universe can doubt. They are the food of birds, and birds add not a little to the mass of animal manure; but these are subjects rather beyond our reach. Insects check very often to an alarming degree vegetable growth, and often destroy vegetable life, and thus contribute to the increase of vegetable manures; but their *direct* agency in increasing animal manures and thus fertilizing the soil, seems to us a very questionable assumption.

He breaks away from the whole subject of his chapter, to attack Sir Joseph Banks's doctrine, "that the mildew in wheat is a fungus." He doubts the *fact*. But the fact is susceptible of proof, and has been proved to be true. Mr. Lorain, however, is not alone in supposing that disease previously existed in the plant, rendering it more favourable to the growth of funguses. This question is one which can never be solved to the satisfaction of *every man*; but there are some means of approximation to the truth. Young trees are often covered with mosses. By removing the moss by alkaline washes the tree recovers its vigour, without changing the treatment of the root, without doing any thing to the soil. It will make more vigorous shoots, and recover its former strength. If you could make a similar application to the stalks of wheat or rye, who can say that their health would not be restored? The grape when young (we mean the fruit) is subject to mildew. The Hon. Richard Sullivan discovered that sulphur would *remove* it (that is, *kill* it) and the bunches of grapes would continue to grow as well as if they had never been attacked. This is *fact*, not theory. The life of the fungus was destroyed; but if the disease had been in the vine itself,

in any *internal* cause, such an effect could not have been produced. The gooseberry is subject to the same disease, in a still greater degree. This year we applied sulphur to the diseased gooseberries, that is, to the berry itself, and it killed the fungus, and the gooseberries became as healthy as before. In all these cases, the application should be made in an *early* stage of the disease. There are several other suggestions in this chapter which we deem as questionable as those which we have mentioned, but the limits of our review will compel us to pass them over at present.

We shall pass over chapters IV. V. and VI. not only because the subjects of them are of very little practical importance, but because to defend the received theories against the fanciful attacks of Mr. Lorain would require a pamphlet as large as a number of this journal. The subjects are the causes of the perpendicular growth of plants; of the ascent of sap; an analogy between animals and vegetables; the denial of the sleep of plants.

On every one of these topics, he is opposed to Sir Humphrey Davy, Knight, Linnæus, and Dr. Hales. He treats them as a set of blockheads for not seeing what was clear to him, that all the phenomena of vegetation are to be ascribed to the "living principle." He seems to consider plants as sentient and almost as voluntary agents. He denies that physical causes are the principal moving principles in vegetable life, and tries to explain the facts on which the theory heretofore received is founded, but to our judgment without the least success. Against Linnæus' doctrine of the sleep of plants, he opposes the fact that he took a light and went into his garden and found all the leaves of his plants in the same state as in day light. He admits clover to be an exception. Did he ever look at lucerne, or the locust, or the three-thorned acacia, all of which surrounded him? We could give him a list of several hundred plants which shut up at evening. A very large

proportion of flowers exhibit the same appearances at night; but these subjects are out of place in our present review, whose object is to present Mr. Lorain's views and practice on the art of agriculture.

Mr. Lorain's VIIth chapter is a very interesting one. His main design is to show that no mixture of simple earths, in any proportions, can make a soil capable of sustaining a luxuriant vegetation without the mixture of animal and vegetable substances. "Even the wonder-working powers of gypsum or plaster have been found insufficient to operate on the inert substratum of a thin soil which has been turned uppermost by trench-ploughing, unless animal and vegetable matter be applied." This important position is indisputably true. Yet a very small amount of animal and vegetable matter is necessary to render both clay, pure clay, and pure sand very productive. Neglected brick yards, where the clay is pure enough to make excellent bricks, by ploughing and manuring for two years only, taking off crops of potatoes each year, have without sand produced luxuriant crops of clover; and if one hundred loads of sand had been carried on to an acre of such lands, they would be fertile for several years. The writer of this review has a piece of ground from which all the humus, or vegetable and animal matter, was removed for certain purposes, and left a body of pure sand, so pure as to be fitted for plastering mortar. It was dunged for potatoes for five years. The crops were small, yet they must have exhausted part of the manure carried on. The sixth year it was laid down with clover and herds' grass without manure, and it has given by the aid of plaster two great and luxuriant crops, and there is every appearance of its enduring another season, as the present crop far exceeds the first. Yet the proposition of Mr. Lorain is true in general, and is admitted to be so by all. Mr. Lorain then proceeds to examine the British practice of paring and burning the soil as a means of improving it. He con-

demns it without qualification, and we must confess that he does it with great force of reasoning, though we should have been better pleased if he had treated Sir Humphrey Davy with more decorum, and if he had tried it himself even on a small scale, and shown us the results not only of the first crop, but of several successive crops. He attributes the apparent beneficial effects of this extraordinary process of British husbandry, not to the efficacy of the ashes so much as to the luxuriant crops of grasses which followed it. His general doctrine is, that grasses enrich the land partly by the shade which they afford while growing, but chiefly by the immense mass of vegetable matter contained in their roots. The judicious and skilful management of these roots in cultivation, seems to be the very first and principal discovery, as he considers it in the process of agriculture. To that more than to any other single thing, he attributes the superiority of his own system; not that he neglects or despises manure; no man thinks higher of it; but the waste of the vegetable matter in the common modes of culture, he deems of more vital importance than any manures a common farm can supply.

To give a view of Mr. Lorain's theory on this subject, we quote the following passages at large, which give at the same time a favourable specimen of his style.

"We may readily make a tolerably correct estimate of the amount of vegetation above the soil, for it is seen. If the earth be carefully removed from a soil of grass cut out sufficiently deep, the number, size, and texture of the roots seem to justify the opinion, that they will weigh as much as the full grown tops proceeding from them, and it would seem that the same may be expected from the roots of the plants generally called weeds. On a lay, well stored either with grass or weeds, any fallow crop that the soil is capable of producing, may be very advantageously grown, and followed by wheat or any other small grain. After these crops have been removed, a considerable proportion of the animal and vegetable matter that was at

first contained in the lay, will remain for the use of the grasses; which ought always to follow the second cultivated crop, when the soil is rather thin, and enriching manure cannot be applied for the first crop.

If a proper system of cultivation be pursued, all the animal and vegetable matter that it seems possible to reclaim from the multiplied avenues of useless waste, will be saved; and if, as in the case now under consideration, the soil happens to be a retentive clay, a much dryer, and vastly more open and freer soil is obtained for the roots of the plants, than can be furnished by paring and burning. When the grass or weed lay is turned, each furrow-slice forms an under drain; especially when the crop of grass or weeds which has been ploughed under is luxuriant.

The innumerable roots that fill the soil in every direction, minutely divide it. The fermentation and decomposition of them and of their tops expand and open it. This with the cavities or holes formed by the gradual decay of the roots, prepare an open, free, artificial bed, well stored with nutriment, and properly calculated to admit the roots of the plants readily to pass through it, in every direction, in search of the food provided for them.

The fermentation that takes place in the soil is never interrupted, or the nutritious matter arising from it exposed to useless waste, as is done by the usual, but very erroneous practice of turning up the sods when the crop is cultivated. Of consequence nothing is lost that could be saved. It is also certain that there is nothing but fire, or some cause which acts with equal effect, that can destroy weeds or any other vegetation injurious to crops, more effectually than fermentation when it is properly directed.

If the lay be well turned and the crop cultivated by the hoe harrow, (called by some a scuffler) with the tined harrow following it, the weeds and grasses are cut off by the first implement a little within the surface of the soil.

The vegetation separated by it from that lying still lower within the ground, is overturned and effectually mangled by the tined harrow. The weeds and grasses within the soil being severely wounded by the hoe harrow, and closely covered by the earth above, the fermentation of them is powerfully promoted every time the fallow crop is cultivated.

Still some hardy plants, and also others which are less hardy, but more favourably situated, will escape. It should, however, be recollected, that even the savage and destructive practice of paring and burning does not entirely extirpate either: also, that fermentation keeps the soil open and mellow, so long as a sufficiency of animal and vegetable matter remains in it. As the small grain is put in by the hoe harrow with the tined harrow following it, the sod is not disturbed either before or after the seed for this is sown. Consequently, the seed of weeds, which lay buried beyond the power of vegetation is not turned up, to poison the crop or the grasses following it.

Neither are the rich matters within the soil exposed to useless waste. I have been compelled prematurely to introduce this very concise description of some of the substantial advantages obtained by a proper cultivation, that the reader may contrast them with the fleeting resources, and ruinous consequences, arising from burning the soil." —pp. 84, 85.

The latter part of this chapter is employed in decrying the importance of carbonic matter, either æriform or in substance, as one of the sources of fertility. He does not seem to deny its power *entirely*, but he attacks the fashionable opinions on that subject with ridicule and with acrimony, and he concludes with the following expressions of self-gratulation. Indeed, if no other man should happen to be pleased, Mr. Lorain had the enviable pleasure of giving entire satisfaction to himself.

"Now, if in all material points the contents of this

and the foregoing chapters be (as I believe they are) correct, it would appear, that although much has been written on the economy of plants, and the nature and properties of manures, but little is well known of either; and that if these subjects be ever 'scientifically explained,' philosophers must retrace their steps, and depend much less on theory, and far more on practice, united with elaborate observation.

If this had been done, charcoal and the gases would not have been rung, until nature was silenced, and reason deafened with the sound. Neither should we have been told, that the 'heart-wood of a tree is dead, and is only useful to elevate and sustain aloft the swarm of biennial plants which cover it.' Nor that 'gravitation disposes the parts of plants to take a uniform direction.' Nor that they 'owe their perpendicular direction to gravity.' Nor that the sap is raised by the agency of heat and capillary attraction, or by 'the expansion and contraction of the silver grain of the wood.' Neither should we have been told, that 'nothing above common matter exists in the vegetable economy.' Nor that 'all the simple leaves of plants had an arrangement at night *totally different* from their arrangement in the day; and that the greater number of them are seen at night closed or folded together.' Nor that gypsum, the alkalies, and various saline substances, are a part of the true food of plants. Nor that the carbonate of lime acts merely by forming an useful earthy ingredient in the soil.

The celebrity of a philosopher whose talents are highly esteemed, may for a time stamp an ideal value even on his errors. Still, those errors would be eventually detected and exposed, if the gentlemen who followed him in writing on the same subject, would examine facts for themselves, as they stand recorded in the great book of nature 'by the pencil of truth,' in place of sitting at ease in their libraries, surrounded by a huge collection of

books, and forming theories of what is said of nature in them."*—p. 98.

Mr. Lorain's VIIIth chapter is on the important subject of preparing manures for their application to the soil. It is true, that no branch of agriculture has experienced a greater change than this, and we may safely add that on none has science, chemical science, done so much to effect a change. This change seems to have been wrought simultaneously, nearly at the same moment in Europe and America. It is difficult to decide, whether Mr. Lorain knew of the change of opinion in England, or whether his own mind brought him to the point which he now maintains. This, however, is *certain*—uncontrovertible—that *we* of *New England* had, most of us, arrived at the same results before we knew that Mr. Lorain existed. His name was unknown to us all five years since, and his work did not reach us till within two years. Some general notions of chemistry had induced many of us to believe, that the thoroughly rotted compost heaps were not only an useless labour, but a great waste of what modern writers considered the *food* of plants. We use a *cant* phrase, which covers human ignorance, because it is in common use. Men, the most learned men, know nothing of the food of plants. All which they know is, the effects of certain applications to the soil in promoting fertility. Theory, however, or rather the science of chemistry led common readers to believe what careful experiments proved, that in the process of fermentation gaseous matters escaped from decomposing materials, which were more essential to plants than perfect humus or soil composed of the products of decayed animal and vegetable substances. Rich, most rich such a soil, produced by compost heaps undoubtedly is, better than any other, because stronger. It was not unnatural,

* 'It is evident, however, that an intimate acquaintance with what is said of nature in those books is highly important, when it is made subservient to practical observation.'

therefore, that cultivators should have adopted the opinion that entirely decomposed animal and vegetable matters were the best possible application to the earth for crops. There was another cause which favoured this universally prevalent opinion. Unfermented vegetable matter carried into the ground immense quantities of the seeds of weeds, and for grain crops it is to *this hour* very questionable, whether perfectly rotten manure is not preferable to undecomposed materials for such crops. As to root crops, and all crops, which are treated with the plough and its auxiliaries, there can be no question. It is rather singular that *one* experiment for centuries before the eyes of horticulturists should not have brought them *at once* to the conviction of the superior efficacy of unfermented manure. We do not know that the suggestion has not been *often* made, but we have never seen it, and therefore we state it, the surprising effect of hot beds. They are made of the most strawy and least decomposed dung in preference. Their effects on vegetation are well known, producing early, rapid, vigorous growth, and premature but delicious fruits. These effects were attributed to *bottom heat* (a cant expression of the gardeners) and partly to the protection of the glass. *Now*, however, the superior fertility, rapid growth, and vigorous health of hot-bed plants is justly ascribed to the gaseous matters which feed both their roots and leaves. The common gardeners, no doubt, contributed very much to the commonly received opinion that thoroughly decomposed earth was most favourable to the growth of all their exotic plants, and from the gardener the opinion spread among the farmers. But Mr. Knight, whose active and intelligent mind has been devoted to the *practical* part of gardening, has proved that it is as true in relation to green-house plants as to crops at large, that unfermented vegetable matter is superior to any compost, however rich. By common sods, in their undecomposed state put into his pots, he has given a young vine

the growth, the astonishing growth of forty-eight feet in one season. So that what a thousand years experience had taught us to believe to be true in the case of hot beds, has been *proved* to be so in relation to plants raised in pots with unfermented matter, having no bottom heat, and deriving no nutriment except from the slow decomposition of vegetable matter.

Mr. Lorain, ever ready to find fault with every body but himself, says, that " the fruitless attempts to make farm yard manure a more proper food for plants, has been a perpetual source of extensive waste and much injurious and expensive labour." This is true. He proceeds to condemn all compost heaps, and he adds, that it is of no service to add good soil to the dung yard; that nothing is gained by it; that we had better apply the dung by itself, and the soil by itself. Now this, in our sober judgment, is carrying opinions generally sound to absurd extremes. Because we all *now* admit, that dung should *not* be piled up in heaps till it is reduced to soil, does it follow as a reasonable conclusion, that the earth from ditches, from road sides, from head lands, should not be brought into the farm yard or pig-sty to be itself enriched by the urine of animals there fed? Is it not an entirely distinct process? No fermentation takes place.. The litter and straw cannot take up all the fluid matters of the barn yard, the greater part will filter through litter. Is it of no value to collect earths, of themselves composed of vegetable matter decomposed, and enrich them by what would be otherwise wasted? Mr. Lorain, it is true, in other parts of his work, haltingly admits, that it may be of some use to add to the natural constituent parts of the farm yard, foreign materials, but he doubts whether it would quit the cost. We know of no heresy greater. We know, that two pigs may be made to manure well, and richly, an half acre of ground, by furnishing them with *proper soil* for them to enrich, three fourths of whose liquid manure, would be wast-

ed, without such care. Recollect, that we are agreed about the inexpediency of compost heaps, as usually recommended. But we are not prepared to abandon *all* compost heaps whatever, nor all applications of *lime* to them. It is not the authority of any one man, however able, which can overturn the practical, equally practical experience of millions. Compost heaps, and the application of lime to them, are highly useful for pond mud. When taken from the pond, it is composed of rotten vegetable and animal matter, dead fishes, frogs and other animals, and of the washings of all higher grounds. By the long action of water it is finely divided, but to use a common expression, *cold*. The fact is, that applied directly to crops in any way, it is apparently inert. Treat it with lime, it is an admirable manure on dry soils. This is the result of twenty years' personal experience. Its value is full equal to the same bulk of the best horse or cow dung unfermented. Where lime is applied to unfermented vegetable matter, we are inclined to believe that its effects may be injurious; yet there are cases in which it may be highly beneficial. We had a body of sods fresh dug, which we wished to use as a manure for a crop, to be put in *immediately*. We treated the sods with lime, in a quantity, and for the purpose of killing the plants, but without entirely decomposing them. We have no doubt that this compost, made in fourteen days, will be better than the *sods* applied *alone*, and the lime added *separately*.

Mr. Lorain's ninth chapter, on manures *not in general use*, is so excellent in general that we shall insert it entire, adding a few practical notes.

"As some manures which are not in general use will be found very profitable, where they can be readily procured on moderate terms, I will point them out, and make some observations on them.

There is no part of an animal which does not furnish valuable manure. The parts that quickly decay are not so lasting, but more powerful.

Bones, when reduced under a stone, similar to those used for grinding tanners' bark, are, when broken into pieces, not exceeding a small chestnut in size, an excellent and very lasting manure. Fifty or sixty bushels are applied to the acre. Much less would suffice if they were broken before the grease is boiled out of them for other purposes. Or if they were much finer ground, a great deal less would produce the same immediate effect.

Horn shavings and turnings are still more powerful than bones which have been stripped of decomposable animal matter. Twenty bushels per acre of them, are commonly applied.

Sheep trotters are said to be very valuable, and applied at the rate of forty bushels per acre.

Damaged wool, and the offal trimming from sheep, are also used for manure, from ten to twenty hundred weight to the acre, in proportion as the quality may be more or less valuable.

Woollen rags, cut into small pieces in a paper mill, have been very successfully used at the rate of from fifteen to twenty hundred weight to the acre.

Fish are sometimes caught in large quantities for manure. Twenty bushels to the acre have been used very successfully. Salted fish, after being damaged, have been also very profitably employed for this purpose. So has the brine from sound fish.

Feathers are a valuable manure; when damaged in quantities, they may be profitably applied to this purpose. The farmer should have the feathers that are not used for more profitable purposes, put into his receptacle. Also, the hair scalded from his hogs, &c. This, or hair taken from skins by tanners is valuable. The blood from animals that are killed on the farm, should also be put into the receptacle, for it is a very rich manure.

Furriers' clippings and curriers' shavings are valuable manure; thirty bushels to the acre. The offals from the tan-yard and glue maker are also very valuable.

It seems probable that the clippings and chippings from shoe makers, saddlers, and others working in tanned leather would be valuable manure; but might require some decomposition previously to being ploughed under the soil.

The scum from the boilers of sugar bakers, consists of bullock's blood, and saccharine matter, consequently is a very rich manure.

Fresh oyster or clam shells, when broken into pieces are a very valuable manure; they would, however, be much more useful and powerful, if they were finely powdered.

Where any kind of shell fish is plenty, and may be readily procured, they will be found very valuable manure, if broken into pieces previous to their being ploughed under the soil.

It is said that the corals, coralines and sponges, contain equal parts of decomposable animal matter and lime; therefore, where they can be readily obtained, they may be advantageously used for manure.

Spoiled salted beef, pork, &c. may be formed into a compost with earth. When the latter has imbibed the principal part of the decomposable animal matter, the compost may be removed with as little or less offence than slaughterhouse dung. The brine of sound beef, pork, &c. is also valuable manure.*

When domesticated animals die, it is the common practice to let them rot above the ground. This is sure to annoy the neighbourhood. If the stench from the animal be too distant to contaminate the air, dogs are fond

* The product of wheat has been considerably increased by soaking the seed in fish brine, and rolling it previously to sowing, in dry unleached ashes. The same effect is to be expected from the brine from meat, in proportion to the animal matter contained in it. Brine made of salt, and used in the same way, has been also found to increase the crops of small grain and prevent smut.

of carrion, and after they have gorged themselves with it, become insufferable inmates to the families to which they belong. The dead animal should be laid on a thick layer of earth, and well covered with the same material. After the covering has sunk in, and the earth has absorbed the animal matter, the compost will not be more offensive than slaughterhouse dung, provided a sufficiency of earth has been employed. If such offensive manures be removed regularly, before the season renders them very noxious, the injurious prejudice against working among them will cease. They should be hauled to the field during the winter, and ploughed under so soon as frost will permit. The same should also be done when night soil is used.

Urine is a very valuable manure, and may be readily saved on farms by putting it into the common receptacle.

The manure from privies is very powerful. It is said that five loads to the acre have restored exhausted soils; and two loads per acre, annually applied, has excited and maintained luxuriant vegetation. The interest of agriculture would be greatly promoted by contriving cheap and simple means of saving the manure in cities, villages, and on farms, and of conveying it to the soil with the least possible offence. Quick lime, or other septic substances, should not be employed to effect the ready removal of it.

Sir H. Davy says, 'The Chinese, who have more practical knowledge of the use and application of manures, than any other people, mix their night soil with one-third of its weight of a fat marl, make it into cakes, and dry it by exposure to the sun. Those cakes, we are informed by the French Missionaries, have no disagreeable smell, and form a common article of commerce in the empire.' 'The earth, by its absorbent powers, probably prevents to a certain extent, the action of the moisture on the dung, and likewise defends it from the effects of the air.'*

* See his Lec. on Agr. Chem. page 296.

The experiment seems to be well worth trial; especially as there appears to be but little, if any difficulty in getting the business done. It offers an additional profit to those who clean out necessaries, to be obtained with quite as little, or perhaps less exposure to offence.

How the Chinese save their night soil is unknown to me. If as much moisture be mixed with it as obtains in our privies, much more marl must be used by them.

A pure compact clay will be found better for this purpose than a calcareous marl,* as the latter decomposes animal and vegetable matters.

The agricultural societies organized in our cities, might have this experiment made with but little trouble or expense. To prevent error, some active intelligent member should, in the beginning, superintend the process.

Pigeon dung is a very powerful manure; so is that from farm yard poultry. However, neither the dung nor the fowl will ever pay the farmer one-tenth part of the money they cost him, if he suffers them to pillage his fields and mow in the usual way. They should be confined when damage may be expected from them in the fields, and the grain in the mows should be kept closely covered with straw.

If this, however, be done, and the poultry are not taught to roost regularly in houses provided for them, but little manure will be gathered. Such houses cost but little, if utility in place of parade governs the practice of the cultivator.†

In some places, much valuable manure may be gathered where wild birds roost at night.

Street dirt is an assemblage of substances; some of

* Clay without any calcareous matter in it, is sometimes improperly called marl.

† In England, what is called a complete establishment for poultry, often costs more money than a valuable farm would cost in many parts of this country.

which are mechanical, others enriching, and some stimulating. When too large a proportion of the first does not prevail, it is a very valuable manure.

Sea, river, and pond weeds, from fifteen to twenty loads to the acre, have been used with success.

The weeds growing in our fields may be very profitably used, provided they be ploughed under the soil not less than five inches deep, and a cultivation calculated to keep them there be pursued.

When potatoes, or any other root which can only be gathered by turning up the soil, is planted, the use of weeds should be avoided, unless the soil be sufficiently deep to admit the practice of trench ploughing.

Straw, and some other vegetable substances, may be ploughed under the soil in tolerable quantities when very wet: but as it is difficult under any other circumstances than a partial decomposition, to plough under a sufficiency of this weak manure, to do any very material good to the crops, it is much better to lose some part of it by fermentation, than to injure the round of crops, and grasses following them. Cornstalks, and other bodies equally hard, will require more decomposition than straw, before they can be readily ploughed under the soil in sufficient quantities to answer any very valuable purpose. Where cattle are plenty, every vegetable substance that can be profitably used for litter, should be applied to that purpose, as the rich juices in the cattle yard will increase their value many fold.

Leaves, when raked up through the woods, in the fall and winter, and suffered to remain under the shade of the trees until a great heat takes place in them, become very compact; and but very partially decomposed. In this state, they may be ploughed under the soil, and are a valuable manure.

If the ground, however, be annually raked, the grasses will grow, the soil will become hard, and the timber be

eventually destroyed, as are the trees in our orchards, when the grasses are suffered to take possession of the grounds. Therefore the woods should be laid out so, that one-third part of them only be raked in the course of three years. By this means, the grasses will be kept under, and nature will keep the soil open and mellow for the roots of the trees, by the fermentation of the leaves, and other substances covered by them. The loss of the leaves from this practice will not be any thing like so great as at first sight appears; for the economy of nature is perfect: consequently, the fall of the leaves of the last year is preserved by her, to form a compact covering over those that had fallen before. This not only prevents the growth of the grasses, but also much evaporation from the fermentation of the animal and vegetable matters underneath them.

It has been confidently asserted, that stone coal is an excellent manure; that it has succeeded both in Europe and this country: therefore, I am disposed to believe, under favourable circumstances, it may be so.

I have tried it here by top dressing, without any perceptible effect, on corn, wheat, red clover, and the spear grasses, although the coal was pounded quite fine, and sifted. This may have happened in consequence of the soil being impregnated with some of the properties of the coal, as it frequently appears near the surface throughout the whole neighbourhood: or it might have succeeded, if it had been ploughed under the soil. There is also a great difference in coal; that used by me abounded in sulphur and bitumen, and burned freely.

The ashes from stone coal have been extensively used for manure at from forty to fifty bushels to the acre. So has soot from the same substance, at from twenty-five to forty bushels to the acre; likewise the ashes and soot from wood. Too little care is taken of soot in this coun-

try. The farmer may have that from his own chimneys put into the receptacle.

Little is practically known of peat in this country; but the ashes from it are much used in England for manure. Burning is, however, a destructive practice, and should be avoided whenever it can be done. It is much better to expose the peat to the influence of the atmosphere, until it can be ploughed under the soil.

The great value of chip manure from our wood yards, when it is but very partially decomposed, should teach us the great impropriety of reducing vegetable substances to ashes, when manure is the only object, and when they may be applied without burning. If these chips were reduced by fire, previously to their being applied, the comparative value of them would be trivial indeed. The cause of this is evident: when they are ploughed under the soil, and a cultivation calculated to keep them there is pursued, fermentation and decomposition are promoted, and gradually spread all their exciting and enriching influence through the grounds, with the least possible loss; and ashes stimulate, but do not enrich the soil.

Sir H. Davy says, 'Peat earth, of certain consistence and composition, is an excellent manure, but there are some varieties of peat, which contain so large a quantity of ferruginous matter, as to be absolutely poisonous to plants.'*

This can only happen when the peat is applied in too large quantities; as Sir H. and many other gentlemen have shown, that ferruginous matter is an excellent manure. It is true, that he rather seems disposed to confine the usefulness of it to calcareous soils; in which, he says, it unites with the lime, and gypsum is formed.

Agreeably to this theory, the peats which contain large quantities of ferruginous matter, may be rendered very valuable manure, by mixing them with fresh slaked lime,

* See his Lec. on Agr. Chem. page 6.

previously to their being applied: but as economy is important in the practice of farming it would be far better to spread the lime first over the lay, and after this spread the peat, and turn the whole under. This will place the lime on and among the peat. If the ground be ploughed a little deeper when the next round of crops takes place, the lime will be brought to the surface of the soil. This practice would be beneficial when peat of any sort, or hard vegetable substances of any kind, are applied for manure.

Sir H. says, 'Inert peaty matter is a substance of the same kind, (alluding to tanners' spent bark.) It will remain for years exposed to water and air, without undergoing change, and in this state yields little or no nourishment for plants.'* Dr. Darwin recommends heaping peat either with or without lime, in order to expedite the decomposition of it.

This, with other accounts we have of the properties of this vegetation, induces me to believe, that Sir H. may be as mistaken about peat, as he evidently is, respecting woody fibre; which, he says, 'will not ferment, unless some substance be mixed with it, which acts the same part as mucilage, sugar, and extractive or albuminous matters, with which it is usually associated in herbs and succulent vegetables.'† Besides the exciting causes here briefly enumerated by this gentleman, there are others which have been mentioned by him :‡ some of these may not exist in some trees, and but little of them in others. Still, there is in every tree a sufficiency to predispose the wood to fermentation, when it is placed in situations fa-

* See his Lec. on Agr. Chem. page 285.

† Ibid. Here Sir H. seems to insinuate, that these matters are confined to herbs and succulent vegetables; than which nothing can be more erroneous.

‡ Idem, page 73.

vouring the process. The simple post, mentioned before, determines this ;* so does the decomposition of the chips in our wood yards, but more especially the innumerable trees that time, tornadoes, &c. have prostrated in our forests.

Here we see, without being misled by erroneous theories, the processes of fermentation and decomposition, in all their different stages, as well as on the different plants which may claim our attention: but as woody fibre is the subject now under consideration, and the decomposition of it has been described, nothing more is necessary to be added, than that some woods rot very rapidly, others, more slowly, and some, either from a deficiency of those principles which favour fermentation, or other causes, decay so slowly, that they are like charcoal, improperly termed by some indestructible. However, the most durable woods are decomposed by time; and a shaded situation, where rain has access, greatly promotes the process.

This is best seen in the back-woods, where various causes induce the settlers to abandon a clearing soon after it has been commenced. In that case, the brush heaps sink soonest into decay. The heaps of logs, from their compact form, and being kept continually more or less damp, by rain and shade, rot much sooner than many would readily imagine, unless they happen to be formed of very durable wood.

If the philosopher, who wishes to study nature, would, in place of making a tour of Europe, where art has nearly obliterated her features, spend half the time and money in the interior of the United States, where the line of cultivation separates pure nature from art, he would not only see nature as she is, but by comparing her perfect system of economy with what art had done in the older settle-

* It should be recollected, that posts are commonly formed of the most durable and well seasoned wood the farmer can readily get.

ments of Europe, and what it was now doing in America, more especially in the vicinity of the wilds where nature presides, he would be far better prepared to write on any subject connected with her economy in the different processes on which vegetation depends.

As all our ideas arise, either directly or indirectly, from our senses, the more we are exercised on the subjects we wish to understand, the better we shall become acquainted with them.

An expert and intelligent artist, who has never seen nature as she really is, may draw an interesting likeness of her. It, however, vanishes when the original appears.

It is said that tanners' waste bark, when completely putrefied, affords an excellent manure; and that one load of it is equal to two of dung. This seems to be rating it highly; however, it may imbibe some animal matter from the hides. If so, it appears that it should be much sooner used, especially as the vegetable matter must also suffer considerable loss by lying so long.

It is also said, that if this manure be intended for grass, it ought to be spread in the latter part of September, that the winter's rains may wash it into the grounds; for if applied in the spring it will burn the grass. But if applied for wheat, it should be spread immediately before the last ploughing, to come in contact with the early roots of the plants.* It would, however, seem that but little is practically known of it. Mr. Young says, 'spent bark seemed rather to injure vegetation;'† he attributes this to the astringent matter that it contains. Sir H. Davy says, 'it is freed from soluble substances in the tan pit; and if injurious to vegetation, the effect is probably owing to its agency upon water, or mechanical effects;' and that it is

* It would appear much more likely to injure the tender roots of the wheat. Practice, however, in the back-woods, clearly determines that it will injure neither, unless the quantity be too great.

† See Sir H. Davy's Lec. on Agr. Chem. page 285.

'an inert substance, and remains for years exposed to water and air without undergoing changes.'*

These opposing opinions furnish one of the numberless instances in which gentlemen, whose talents are highly and justly esteemed, advance opposite theories; and clearly determine that nature and reason should be consulted by the farmer, before any practice be admitted or condemned by him. More especially as neither of these gentlemen is right.

As far the greater part of the astringent matter contained in the bark is expended in the tan pit, that principle cannot injure vegetation, unless too great a quantity of spent bark be applied.

Where tanning is judiciously conducted, and bark sells high, all the astringent matter that can be profitably used is extracted. Still, when that matter becomes too inconsiderable to pay the expense of attending the further use of it, the process ceases, and leaves the remainder in the water and in the bark.

As the principles which promote fermentation have been extracted to a considerable extent in the pit, tanners' spent bark cannot ferment so freely as bark from which none of those principles have been extracted, unless the animal matter imbibed from the hides may make up this deficiency; which seems to be a doubtful question. Therefore, where lime can be had on moderate terms, it may be brought much sooner into active use, by the application of lime in the way that has been recommended for using it with peat.

Sometime after trees are girdled, the bark begins to fall and the process goes on gradually. That from the bodies or trunks, which constitutes a considerable part of the whole, generally rests in the forks formed by the roots. Where bad cultivation prevails considerable quantities of it are often covered with the soil. In this state it appears

* See Sir H. Davy's Lec. on Agr. Chem. page 285.

to decompose freely ; but if the quantity happen to be too considerable, vegetation languishes and looks sallow. The same, however, occurs, where any other vegetation that is but partially decayed, accumulates in excess.

It seems to be worth trying whether the liquid from the tan pits would not promote vegetation, after it was no longer useful for tanning.

But few rabbits are kept in this country. However, as their dung is very valuable, it should be saved.

Rape cake is also highly esteemed, and has been very successfully used for manure in England.

Linseed cake is said to be an excellent manure, but unless it has been damaged it is generally too costly to be applied to that purpose.

Malt dust is also said to be a good manure.

In fact the offals of almost every mechanical employment furnish materials for valuable manure. Even shavings, sawdust, and the chips and turnings from those working in wood. Therefore, it would be very tedious to enumerate the whole of them. Enough has been said to show that many manures, scarcely ever used in this country, are exceedingly valuable, and that much more attention should be given to them.

That water is a powerful promoter of vegetation is every where seen; but until I removed to this elevated situation, I had not so clearly seen the immense powers contained in simple rain water to effect that purpose.

The passing clouds more frequently water the soil ; consequently grass abounds much more than in the same latitude where the grounds lie much lower.

Our summers are much cooler and shorter than in the same line of latitude below us. Yet Indian corn, when planted in time, and properly cultivated, seems to be equally productive. To that crop moisture appears to compensate for a deficiency in heat. Other spring crops, on equal soils, appear to excel those below us. The same may be

said of potatoes and turnips. I have grown the latter here without manure, and on rough grounds, not well cultivated, that weighed eight pounds.

Water is an important agent in promoting the fermentation and decomposition of animal and vegetable substances; and its fluidity is well calculated to convey the nutriment arising therefrom to the roots of the plants. It also constitutes a considerable portion of the bodies of plants, and as it has been before observed, is capable of dissolving most natural bodies, and also of imbibing and conveying their properties. Water parts with some substances previously to its descent in rain. Still, there is great reason to believe that it either retains, or gathers in its descent, enriching as well as fertilizing principles; as it soon becomes putrid in vessels which do not appear to communicate any of the causes of putridity to it.

Notwithstanding the numerous advantages derived from water, a superabundance of it, joined with a deficiency of heat, retards fermentation, and vegetation languishes and looks sallow, unless proper division has been made to carry off the excess. These effects are most pre-eminently seen in grain fields, especially in those of wheat sown in the fall where proper water furrowing has not been introduced.

The growth of the grasses is also considerably retarded from the same cause, but they are seldom very materially injured in this way, unless where the water becomes stagnant. If this occur, and very warm weather succeed, even grass may be greatly injured, and is sometimes ruined by a superabundance of putrefaction. If this be kept up by permanent spouts or springs, no valuable vegetation can exist; except near to the head or fountain of the springs, where it is generally luxuriant, and will often continue to grow through the winter, when vegetation is every where else completely locked up by the frost. It seems that the water passes off too soon near the spring to acquire sufficient putridity to injure the grasses.

This should teach the farmer the great impropriety of cultivating wet grounds, until he has properly drained them, unless ridging and water furrowing them in the way that will be hereafter described will answer the same purpose.

However, where the grounds are free from spouts or springs, this supposed excess of moisture, which cultivators who farm in every clime and soil alike consider a great disadvantage, may with proper management be turned to certain profit. It is not very difficult to make provision to run off an excess of water from rain; but where enough of it is wanting, it cannot be introduced in sufficient quantities for agricultural purposes, but by an expense entirely inconsistent with the economy of farming.

Hence it is that the grasses, and cultivated crops, in climates subjected to what is too generally considered a superabundance of moisture, are, when properly ordered, green and luxuriant, while those growing on lands which are much more highly esteemed are parched with drought.

Farmers who have exercised too little observation, and of consequence, as was before observed, farm in every clime alike, say, those dripping climates are excellent for grass, but very unfit for grain. It may, however, be laid down as a maxim in farming, that where real good grasses abound, grain will also abound, if a proper system of husbandry be pursued.

England is a northerly and moist climate. Still, grain prospers there, and would prosper as well, perhaps better, in Ireland, if as good a cultivation prevailed.

But it should be recollected, that the well instructed British agriculturist does not expect good crops of grain from an exhausted soil, unless it has been previously well manured, and if the soil requires it, laid dry; not only by proper water furrowing, but by laborious draining also, if that should be considered necessary.

It is generally believed that the atmosphere is laden with substances which greatly promote vegetation, and also enrich the soil; particularly when the latter is well covered with plants calculated to gather and shield those depositions from the improper action of the sun and air. Still, the great importance of gathering and securing them is not sufficiently appreciated; or a cultivation and management immediately opposed to it would not so generally prevail.

Their value is demonstrable, if it be granted, that all the improvement made in any soil with its own produce alone, must proceed from the enriching and fertilizing principles derived from the atmosphere; especially if the grain and roots grown on the farm be principally sold, and the principal dependence for enriching it, rest on feeding the hay and other fodder to cattle on the place, and using the straw and offal vegetation for litter.

Under circumstances though not exactly alike, but in substance the same, an improvement of nearly fourfold was made, in the course of five years, on a farm with which I was, at the time this was doing, intimately acquainted, and witnessed the progress of the improvement. It was determined, by estimating the value of the different crops; and the soil appeared to me to be fully as much, if not more, improved, during this time, than the crops had been. Some extraneous assistance was had recourse to; but more manure remained on the farm unapplied when this estimate was made than equalled the value of the foreign aid introduced by the cultivator.

The farm contained about one hundred and six acres of ground, of which about fifteen acres were thinly set woodland. The leaves from the woods were generally, but not always, used for litter. However, the loss to the soil from the sale of nearly all the grain and roots, must have very greatly exceeded the advantage derived from the leaves, although their value was not deemed inconsider-

able. Now if this improvement did not arise from the enriching principles existing in the atmosphere, it is difficult to devise how it could have happened.

Although the hay, grass, straw, &c. were made into better manure than it is probable these substances afforded in their native state, the cattle which were fed on the hay, grass, corn fodder, &c. were bought in lean, and sold out to the butcher fat. They of consequence took away with them more enriching matter than they brought; and all the enriching matter left by them in the dung, was the produce of the food eaten by them. But it should be observed that the fields which were not under cultivation were in grass, and so managed, that they derived every advantage which might be rationally expected from the rich matters floating in the atmosphere. The dung was carefully gathered and ploughed under the soil, previous to any material waste from fermentation. However, the cultivation of the crops was too seldom calculated to save it from useless waste.

I have mentioned before, that as maize is large, the economy of it is more readily observed than that of many other plants, and that it may be clearly seen that this plant gathers much of the nutriment by which its ears are formed and matured from the atmosphere.

The economy of the kidney bean, together with that of all the plants, which penetrate the soil, with the seed from which they vegetate attached to the extremities of their stems or plume, demonstrates, that nature has ordered or contrived plants so, that they have the power to convey the nutritive matter found in contact with their tops, throughout their whole general system, equally as well as that imbibed by their roots. This very interesting part of the economy of nature has also been very ingeniously determined by art, as by planting the tops of some kinds of trees in the ground, and elevating their roots in the air, the buds which usually form leaves become roots; and

those which when in the ground, formed roots or radicals, were changed into leaves, flowers, &c.

The kidney bean, when it comes up through the soil, brings the seed with it. The bean, in the process of vegetation, is split lengthwise. The colour of it is but little changed, and but little of the nutritious matter seems to have been exhausted previously to its appearance above the soil. After this, the two sides separate wider apart, and seem to flatten more or less daily, until they are formed into leaves; the colour of them gradually growing greener, in proportion as the nutriment contained in them is exhausted by the infant plant. My examination of the leaves formed by the bean, has unfortunately been carried no further. Therefore I do not know that these leaves grow as large, and are as perfectly formed as the other leaves of the plant.

Dr. Darwin says, 'The seed lobes of this plant are converted into leaves, and perform the office of lungs.' But he is certainly mistaken in saying, 'they have given up beneath the soil the nutriment which they previously contained.'* This is a very gradual and a highly important process of nature, whether it be performed either above or within the soil. In the case of the kidney bean it is, however, evident that this process is principally performed above ground.

The thinning and suckering of maize, has ever appeared to me to be a very important part of the proper management of that crop. Therefore, I have given much personal attention to both; and have pulled up plants from twelve to fifteen inches high, with a part of the seed still attached to the root: but in common it is decayed before the plants are so large.

However, so far as my observation has extended, it would seem, that the fermentation and decomposition of

* See his Phytol. page 23.

seed greatly depend on the exciting causes found in contact with it. This appears to be still more probable, as we all may see that seed vegetate very precariously when sown in an old worn out soil: also, that on such soils the seed of those grasses which require much nutriment, remain torpid until the grounds are enriched.

Those circumstances seem to show, how it happens that plants from seeds coated with gypsum, previously to their being sown on a thin soil, are so much more luxuriant than those sown on the same description of soil, without being covered with that substance.

The gypsum hastens the decomposition not only of the richer matters stored up in the seed, but also the outside covering of it which is less nutritive, and of consequence sinks lower into decay. It would appear, however, that neither of these substances is soon enough decomposed by the feeble fermentation which occurs in a thin soil. Therefore the plant growing from seed thickly coated with gypsum, is well supplied with the nutriment which nature has prepared for its support during its infant state. This causes the organization of its system to be much more perfect and robust;* and of consequence much better calculated to perform the functions of life, than a plant which, from a slow and scanty supply of the same kind of nutritious matter, becomes debilitated, and of course much more imperfect in the organization of its system; therefore has not sufficient strength or power to extend its roots deep and wide, in search of the thinly scattered nutriment afforded by a poor soil. As the tops of plants thus circumstanced are equally as much debilitated, and as imperfectly organized, as are their roots, but little nutriment can be gathered from the atmosphere by them.

Here again we see the close analogy which exists be-

* No question but the gypsum with which the seed is coated acts powerfully on the animal and vegetable matters found in contact with it, and that this, like leaven, spreads fermentation.

tween plants and animals. If a pig or calf be weaned while it is young, or can obtain but a scanty supply of the nutriment provided for its early support, and the husbandman does not supply this defect by proper nutritious food, we observe that the animal becomes meagre, feeble, mangy, pot-gutted, inactive, and its hair is long, dead, and shaggy. In fact the organization of its whole system commonly becomes debilitated and deranged. It also seldom happens that an animal which has been thus neglected and stunted, can ever be so much restored as to attain the same perfection as those that have been well provided for during their infancy.

In the fall of 1814, I turned under a soil thinly set with native grass, principally white clover; but as it has been my lot to follow perpetual ploughers, or rather scratchers of the soil, it was thickly set with brambles and sprouts from the roots of the girdled timber. The soil had been much exhausted: it had been, however, long enough abandoned by the man who had destroyed the timber, and ruined the soil, to be covered by nature with the vegetation above described. Early in the ensuing spring, wheat was sown on the lay. This was covered by the tined harrow, and red clover seed sown on it. The wheat plants generally looked weakly, as soon as they penetrated the soil, and in this state they continued, until the crop was matured. It would appear that the energy of the plants was not sufficient to penetrate the slowly decaying sod formed by an impoverished soil, in time to obtain a tolerable supply of nutriment from it.

The crop was so scanty that it determined me to procure ashes to dress another field of the same description of soil, and exactly in the same condition, which I had resolved to lay down in red clover, by the same mode of management. It, however, so happened that but few ashes could be saved, and these were more or less injured by rain. They were spread over about half the field, but

so thinly that little perceptible good was expected from them. This induced me to coat the whole of the seed with as much very finely powdered gypsum as would adhere to it. The plants, on their first appearance, looked healthy and vigorous, as well where the ashes had not, as where they had been spread, and so they continued to do. I am now reaping the field, which, from first to last, has caused much surprise to all my neighbours, who knew the grounds, and how much they had been exhausted; especially those who had examined the product of the first mentioned field. I believe the produce of the present field cannot be estimated per acre, at less than double that of the former one; although the soil, cultivation, and condition of both were exactly the same; except that no gypsum was employed in the former instance. The crops of spring wheat were generally quite as good, if not better, last year, than they now are. I will conclude my book on vegetation and manures by observing, that the manures arising from the tops and roots of the grasses ploughed under the soil, are so closely connected with cultivation, that the best modes of obtaining them, will naturally occur in a description of that cultivation best calculated to gather, apply, and preserve them from waste.

In this description, which will appear in my next book, it will, I trust, be clearly seen, that incalculable advantages may be obtained, from the proper application of the roots and tops of the grasses for manure; that they may be so applied and managed as to produce at least double the advantage, both to the crops and the soil, that has been obtained from them by the too general mode of management. Also that the grasses in the hands of a judicious cultivator are nature's certain restorative; the only rational means by which the farmer will be enabled to restore exhausted soils, and keep them with that part of their own produce *alone*, which he may readily spare, constantly

as well stored with decaying animal and vegetable matter, as they were when subjected to the simple but wise economy of nature alone. Likewise that an immense loss in the tops and roots of the grasses, and also in farm yard manure, as well as in the fertilizing principles floating in the atmosphere, naturally arises from the present too general mode of management, both in the application, and cultivation after they have been applied. And that, by a proper system of husbandry, these losses may be readily avoided, and the value of the crops greatly increased; the soil enriched, in place of being exhausted, and far better prepared for succeeding crops, with much less labour and expense than generally occur in the usual way.

After this has been done, if the reader will sum up the various losses in manure, that naturally arise from the present too general mode of gathering and managing of it, and also from an injudicious and irrational cultivation, he will certainly find them excessively great.

When calculations are made on principles that cannot be certainly established, they will not be correct. Still, it seems probable, from what has been generally advanced, and also from what happened on the farm mentioned above, that if the immense sums of money or labour expended in the useless and destructive attempts to make animal and vegetable matter a better food for plants, also in a laborious and injurious cultivation, were spent in procuring the litter and saving the dung, which is now too generally wasted, that the produce of the United States would be at least doubled in the course of five years; without estimating the aid which may be derived, during that time, from the increased agricultural capital and population, that is to be expected from the great influx of foreigners, or in fact any other aid, than that of proper management."

Remarks on Mr. Lorain's ninth chapter.

We wish our farmers generally would attend to the remarks of Mr. Lorain and of Sir Humphrey Davy on the use of manure from privies. If it be true, "that five loads to the acre have renewed exhausted soils, and that two loads per acre *annually* applied have excited and maintained luxuriant vegetation," it is surely a subject of vast importance to farmers. We fear that this species of manure is not used, except by the farmers near the capital; but private families in the country might employ this most powerful of all manures at a very small expense. We would suggest a mode of making this manure very valuable, at a trifling cost. The buildings are easily removed. Let the vault be dug, and its bottom covered with clay if within reach. The clay should be tempered, and rammed hard. Even the sides might be lined with clay at a small expense. Where clay cannot be obtained, let the bottom be *puddled;* that is, the earth saturated with water and then rammed down hard. As it is proposed to clear this pit out every year, let it be filled to within two feet of the surface with straw or leaves and earth, laid in loosely. In this way, all the animal matter, fluid and solid, will be preserved. The Chinese use clay, and make the whole into cakes; but this is a labour, which farmers in general will not perform. To make this manure easily accessible, the building may be raised on posts, and entered by a few steps: it may be surrounded by a bank, raised above the surface two or three feet, covered with sods, to make its external appearance neat. One side only need be opened, and the contents evacuated by hoes and other instruments in a short time, if performed annually. The earthy and strawy materials will render the process less nauseous.

This manure, applied to squashes, pumpkins, or any other garden crops, would last (we speak from experience,

having applied it to grape vines,) from five to seven years. If Mr. Lorain is in any degree correct in saying that five loads will fertilize an acre, the contents of a privy in a large family would be at least equal to the manure of three or four horned cattle. These details are perhaps too minute, but the amount wasted of the most valuable manure is certainly much greater than most farmers are aware of. When Mr. Lorain remarks, that "when potatoes, or any other root which can only be gathered by turning up the soil, is planted, the use of weeds should be avoided," it should be received with this very important qualification,—weeds should never be used in *any* soil, or for *any* crops, unless they are cut before any *one* seed ripens. Sluggish and careless must be the farmer who suffers any of his weeds to perfect their seeds. They should not be thrown into the pig sty after they have ripened their seeds. But there is a remark, which should not have escaped Mr. Lorain; that if they are not ploughed in, they will shed their seeds on the ground, and the chance of their being checked, and even destroyed by rotting, is much greater when ploughed in below the surface, than when left *above* it. We have before stated, that we consider a rich crop of weeds not only *not* an evil, but to the spirited cultivator a blessing. It may be said, that this is a contradiction to the caution, not to suffer them to ripen their seeds; but that caution was designed for those who never plough and hoe till they see their weeds "breast high." There is one exception as to the utility of weeds or noxious plants; that is, to those plants which propagate by their *roots*, such as couch grass, sorrell, and the nettle. Such plants should be entirely *extirpated*. The process is very laborious, but it is some consolation to the farmer, that this extra labour is not lost; for the minute subdivision of the soil, which this labour compels him to make, is useful not only to the existing, but to all future crops.

Mr. Lorain is the only writer, whose works have met our

eye, who has adverted to the use of the ashes of *mineral coal.* It has not been for want of research that it has escaped our attention, but he adverts to some authorities unknown to us.

He says, that personally he has not experienced any benefit from the use of them, but that they have been extensively used for manure at the rate of from forty to fifty bushels the acre.

This is a question of some importance in New England. The ashes from our own personal consumption of the *anthracite* coal amounted to twenty bushels, and several more from a green house. The use of this coal in the numerous manufacturing establishments renders this question, one of considerable importance. We applied these coal ashes to a dry sandy and gravelly hill, and also to a very wet meadow. Six weeks, only, have elapsed since the trial. On the hill, the ashes have brought in a very clear and decided increase of grass. Whether this is owing to the ashes, or to the minute parts of the carbonic coal, not consumed, we cannot say. We have the greater doubt on this subject, as it has been stated on authority, the value of which we have had no means of testing, that pulverised anthracite coal is valuable, as a manure. As to the wet lands, to which it was applied, it must remain doubtful, whether its apparently useful effects, were merely mechanical, or whether it operated as a manure. Most certainly the question is of considerable importance, when we know, that 4000 tons of this coal are annually consumed here, and the future consumption seems to be illimitable.

Mr. Lorain speaks of tanners' bark, as of questionable utility, but without *denying* it. That it is useful to trees, we know by long experience; whether by keeping the ground open, or by affording nutriment, or both, we cannot at present say. There is one fact, however, which has great weight with us. One of the most intelligent cultivators, and one of the most successful, Deacon Corey of

Brighton, we have remarked for many years, has made very extensive use of bark in his compost heaps. Many other farmers have used it in their pig sties, as a means of increasing their manure. There can be no question, that oak bark, which the English farmers use *alone*, is much more easily decomposed, than the hemlock bark. The reason is very obvious, that the resinous plants longer resist the effects of putrefaction, and are, of course, decomposed with more difficulty, than that of trees, which are not furnished with resin. Rot, however, they *all finally* must, and those, who are within the reach of this material, which has been generally wasted, would do well to avail themselves of it. Even the fastidious Mr. Lorain, (opposed to all the means of hastening the process of rotting vegetable substances), probably would have consented to the use of lime, in accelerating the decomposition of *tanners' bark.*

We shall now take leave of Mr. Lorain, for the present, with the hope of renewing our acquaintance with so intelligent and able a writer, and a thoroughly experienced farmer. We began, with the intention of examining his whole work, in the same minute (though we are conscious) imperfect manner; but we soon found, that we must either dogmatize (as it seems to be the privilege of reviewers to do) or meet the author on fair, and equal ground. We have preferred the latter, as the most useful course. The delay is of little moment, because Mr. Lorain's work is so expensive; so full of learning, and book reading, that it will be seen by a few educated farmers *only*; and when we resume the subject in our next number, it will be as fresh, and new to most of our readers, as if we had finished it now.

What we have at present done, may have the effect of inducing many to look at the work, and surely, it will be no small recommendation of it, to perceive, that its *first* book has elicited so many remarks, and is so full of in-

struction and matter, as they must perceive it to be. If in the course of our remarks, we may have appeared to be, in any case uncandid, we can truly say, that it was without intention, and that we have only followed the example of our author in expressing our opinions fearlessly, without favour or affection.

NEW PRESENT OF FRUITS TO THE CITIZENS OF THE UNITED STATES, BY THO. A. KNIGHT, ESQ.

It would, indeed, be an unpardonable neglect in the Trustees of the Massachusetts Agricultural Society, to fail in putting upon record, in their journal, the following generous and public spirited letter from Mr. Knight. It should be known, that the box mentioned in the following letter, was a duplicate. Mr. Knight having despatched the same plants a year before, which, owing to the negligence of a carrier, were utterly lost; I am now able to state, more precisely, the fate of the trees and scions sent, though many of the scions are still in a doubtful condition. There were six pear trees sent, which are *all alive*. Three of them are known; Oakley Park No. III; Downton No. V; the Lowell pear ripening in England as late as May; three trees are unknown; the labels having been detached on the passage. There is a moral certainty, however, that these are No. I, II, and IV. All the other pears in Mr. Knight's list were sent as scions; they were all numbered by notches on the scions clearly distinguishable, but there were no scions marked I, II, and IV. Of course, the trees whose labels were lost, were these numbers; but we shall only know them when they bear fruit, unless Mr. Knight shall replace them, which we have no doubt he will. The nectarine trees are all alive; so are the cherries and the fig trees, and the Siberian apple, so highly praised as a cider apple.

As to the scions: No. VII, the one most highly spoken of by Mr. Knight, are growing and out of danger. No. XV. is also growing; so that of the pears in my possession, eight varieties, entirely new, are secured. Some others are yet fresh, and may grow. I divided the scions between myself and Gorham Parsons, Esq. whose great accuracy, and care, recommended him to me, as one of the fittest persons to secure the feeble and unpromising grafts. I have not heard what has been his success. The grapes, the Verdelho, and *striped fruited* grapes, were cuttings; two of the first, and one of the second, are now growing. Some of them were grafted into the roots of other grapes, and are also growing.

I have now only to add, that in July I shall be ready to give buds to such as may ask for them, till the stock shall have been exhausted; and I beg it may be considered, as a special favour to me, that persons disposed to take care of them, shall apply for them. It is a trust for our country, which I am anxious to discharge with the fidelity, which Mr. Knight expects from me. He considers me as his agent to spread these fruits as widely as possible, and I would endeavour to show, that the confidence has not been misplaced.

JOHN LOWELL.

Roxbury, near Boston, Mass. June 5, 1828.

From the New England Farmer.

The friends of Horticulture will be pleased to learn that the following letter was received by the last Liverpool and Boston Packet, from Thomas Andrew Knight, Esq.

Downton, March 6, 1828.

John Lowell, Esq. Roxbury, Mass.

Dear Sir,—Two causes have prevented your receiving my thanks for your letter of last autumn, and for the medal which I had the high honour to receive from the Massachu-

setts Agricultural Society. At the period when the medal came into my hands, an inflammation of the eyes precluded the use of my pen; and, shortly after, my *only son*, a young man of whom I had every reason to be proud, was, while shooting in my woods, mortally wounded by one of his companions, and died the next day. My life has since been, and I fear will continue to be one of wretchedness. But I am not the less sensible of the honour I received by the medal of the Massachusetts Society, to the members of which I request you to present my warmest thanks. I send you a box of plants, and grafts of several new varieties, of pears of more hardy habits than those formerly sent you, with some other varieties of fruits. You will see a description of them as far as I am able to give one in the Horticultural Transactions. I add a list on the other side, and also attach on a parchment nailed to the lid of the box, another list, so that you will know them should this letter miscarry. The Dutchess D'Angouleme pear is large and beautiful, but I do not think very highly of it. The Gloria, and the D'Aremberg are very superior to it. You have both the varieties, the former sent to you by me under the (then known) name of Colmar d'hyver.

I shall send a plant and some grafts of a new cider apple, the Siberian bitter-sweet, described in the Hort. Transactions.

Your country may possibly be too warm for it, but it will bear most profusely any where, and it yields a cider as free from acid as the wines of any country.

CONTENTS OF THE BOX.

Nectarines. Four new varieties—No. 1, Downton—2, Althorp—3, Jekworth—4, Imperatrice.

Figs. No. 1, Nerii—2, Lee's perpetual bearer.

Pears. Four varieties *labelled* from the Horticultural Society, of great excellence. Also,

No. 1, Jekworth—2, Althorp—3, Oakley Park—5, Downton—6, Hampton Court, (grafts of another variety are mixed with these)—7, Wormsley Grange—9, Garnstone—10, Powis Castle—11, Foxley—13, Burghill—14, Rouselench—15, Capel. All these varieties succeed well in Herefordshire as standards—*all new*. The *original trees* only of *several* at present exist.

Also the Elton cherry, which failed with you before; one fine new strawberry, and the Pitmaster scarlet strawberry. I send a plant and cuttings of a pear which I have named for you, the *Lowell pear*. Our climate is hardly warm enough for it, but in yours I think it will prove excellent, and a very productive variety. No 7, requires to be gathered before it is quite ripe. It is in Herefordshire a variety of first rate excellence, rivalling the Brown Beurre, in its most perfect state. Should there be any variety of fruit or other article described in the Hort. Transactions, or *in any way known to you to exist in this country*, which you may wish, or I can send to you and my *American friends*, (for I venture to call them *such*) I beg leave to assure you that you will gratify me by giving instructions to send them.—I remain, my dear sir, sincerely your's,

T. A. KNIGHT.

No comment can be necessary on this liberal and most honourable letter. The box is not yet delivered; I am unable to say, therefore, what is the state of the plants. I shall only add, that the donation is made to *our Country*, and as such I shall, as I have ever done, treat it. Buds and scions shall be distributed, as fast as they are produced. No man need feel the least delicacy in asking for them; till they are exhausted, they will be annually delivered to the first applicants without favour or affection.

JOHN LOWELL.

Roxbury, May 1, 1828.

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AN ADDRESS

Delivered before the Massachusetts Society for Promoting Agriculture, at the Brighton Cattle Show, October 20th, 1830. By JOHN C. GRAY, Esq.

IT is with great diffidence, my friends, that I now address you. This duty has hitherto been discharged by men distinguished at once as theoretical and as practical farmers, able not only to display in impressive language, the immense importance of Agriculture, but to convey to their audience much valuable practical information. I cannot pretend to follow in their footsteps. My experience in Agriculture is comparatively recent, and my pretensions to the name of an accomplished farmer extremely moderate. But I trust that I yield to none in my zeal for the best interests of this great art; and having been requested by my associates to make some remarks on topics connected with the business of this day, I have not felt at liberty to refuse so to do, though I can offer you nothing better than a few general and desultory observations.

You well know, my friends, that Agriculture is the most ancient of arts, unless, perhaps, we should consider the mechanic arts as coeval with it. You are equally aware, that in our country, at least, it has ever been considered one of the

most respectable of human avocations. It has always numbered among its votaries many of our most distinguished citizens. It has formed either the chief business or the favorite recreation of all, or almost all, those whom the people of this nation have elevated to the highest office in their gift, and your minds will naturally revert to a distinguished instance within our own commonwealth of the zeal, the steadiness, and ability with which this pursuit has been followed, amidst the successive and pressing avocations of the bar, the bench and the chair of state. But it is only within a short period, that Agriculture has held the rank in public estimation, and engrossed the share of public attention, due to its immense importance. While the great interests of commerce and manufactures have occupied, at different periods, much of the time and thoughts of our national and state legislators, the improvement of our Agriculture was left for a long time to the detached efforts of individuals. The Massachusetts Agricultural Society was founded as early as the year 1792; but for several years it stood alone in the commonwealth, it received no patronage from our Legislature, and its efforts were far less conspicuous, and less effective than in later times. Notwithstanding the number and respectability of those who composed it, it was in every sense of the word a private, rather than a public association. It was not till nearly ten years after, that a second society was incorporated. The honor of introducing into this state those important engines of Agricultural improvement, Cattle Shows — and a high honor it is — belongs to the county of Berkshire, where the first Cattle Show was held in the year 1814. The first Cattle Show held at this place was in October, 1816. At present, there is not a county in the state without its Agricultural Society, and its Cattle Show, with the exception of the county of Norfolk, and of the four counties of Suffolk, Barnstable, Dukes and Nantucket, which consist, principally or wholly of maritime towns.

I need not say how great are the improvements, which, since the establishment of these societies and shows, have taken place

in every branch of our Agriculture. To give a complete history of those improvements, to draw an exact parallel between the Agriculture of Massachusetts as it now is, and as it was previous to our last war, would be, indeed, a most interesting task, but it would be unsuited to the narrow limits of this occasion, and is worthy far abler hands than mine. I shall, therefore, merely state a very few facts, in relation to one description of improvements, which, while they are among the most important, are also the most obvious to the general observer; I mean the changes which have taken place in our *domestic animals.* The most striking of these, is the entire revolution which has been effected in our *swine.* A few years ago our state was disgraced by a tall raw-boned race of these animals, who seemed formed, as has been observed by a great poet, of some of our own species, merely to consume the fruits of the earth. This breed bears a great resemblance to the Gloucestershire breed of Great Britain, which is supposed by the best English writers on Agriculture, to have once prevailed throughout that island, and we may therefore infer, that the two breeds are in fact derived from the same source. This most unprofitable description of stock is almost expelled from the commonwealth, and we trust will soon be numbered with the things that were. Its place is supplied by animals of a far different kind, whose superiority is obvious at the very first view. But though we all know that a material change has taken place, few of us may be equally aware of the profit which it has produced to our commonwealth. This was estimated by the most competent judges several years ago, at not less than one hundred thousand dollars per annum, and is now probably considerably larger, as the change at that time was much less entire than at present.

The improvements which have been produced of late years in our *sheep*, by the introduction of the Spanish and Saxon races, will appear to be of far greater consequence, especially when we consider the immense and increasing importance of our woollen manufactures. The whole number of sheep in New England is in all probability not less than 3,600,000, of

which nearly the whole are either of the foreign or mixed breed. It is believed by our most intelligent and experienced dealers in wool, that the value added to this product, by the introduction of the above mentioned races, may be safely estimated on an average, at one third of a dollar per fleece. Consequently New England has gained in the increased value of this staple nearly twelve hundred thousand dollars per annum, which, to avoid all danger of exaggeration, I put down at one million. A million of dollars added in a few years to the annual revenue of New England, by the improvement of only one branch of her Agriculture!

The improvements which have lately taken place in our *horned cattle*, may be less striking than those which I have already stated. In the first place, as these are animals of much slower growth than sheep or swine, a longer course of years is required to render any improvements extensive or perceptible. Secondly, the necessity of improvement, though great, was less urgent and manifest in this case, than in those before mentioned. Our native breed of cattle, commonly so called, is supposed to be derived from the Devonshire stock, which is held even now in high estimation. The individuals of this species of animals brought over by our forefathers, were probably among the best then existing in Great Britain. The first settlers of Massachusetts Bay, were in many instances men of large property, as well as great intelligence. I find in a history of New England written as early as the year 1652, a statement of the expenses incurred by those settlers, for the transportation of themselves and their effects, up to that period. From this it appears that the transportation only (exclusive of the price) of their domestic animals, cost them twelve thousand pounds sterling. It does not seem probable, that when called upon to incur so great an expense for the mere freight of animals, they should have neglected to select those of a good quality, inasmuch as any others could hardly be worth the carriage. However this fact may be, it is certain that we have long possessed in this state a race of cattle highly respectable, containing many in-

dividuals which would compare advantageously with the finest animals of this description in any country. Still I am warranted by the opinions of the best judges in asserting, that a marked and important improvement has taken place in this, as well as in other descriptions of our domestic animals, since the introduction of agricultural societies and shows. I shall not agitate the much disputed question, whether this result be owing in any degree to the introduction of fine cattle from abroad. It is enough for my purpose, that the result itself is unquestionable, and that it is the effect of an increased care in the selection of animals for breeding. Now let it be recollected, that a considerable part of Massachusetts is essentially and unchangeably a grazing country — that beef cattle constitute the great staple of most of our interior districts, and form a large portion of the remittances made by the country to the sea coast, in exchange for the articles of use and of luxury which are drawn from thence. It appears by a statement in the New England Farmer in 1828, that the value of cattle sold at Brighton, principally or wholly for slaughter, in a little more than two months, amounted to about $540,000. These two months were, it is true, the busiest in the year, but after all proper allowance for this circumstance, I think we may safely estimate the value of the horned cattle sold annually at Brighton, at a million and a half of dollars. When we consider, in addition, the immense importance of the products of our dairies, it must be acknowledged, that too much consequence cannot easily be attached to the improvement, to a still higher degree, of our breed of cattle, nor too much praise awarded to those who have so faithfully, and thus far so successfully, devoted their attention to this object. There is one improvement in this description of animals, which I notice more particularly, because I believe it to be peculiar to New England, and consider it as one of her chief glories — I mean that which has taken place in her working oxen, whether employed in draught or in ploughing. The ox has been denominated by one of the most distinguished and best of men, Dr Watts, *our fellow laborer*, and the appellation

is as true as it is beautiful. Yet how long was it, before we rendered full justice, to the merits of this humble but powerful auxiliary. His meekness, his steadiness, his capacity of enduring severe labor and subsisting on coarse fare, were indeed too striking to remain concealed, but it was for a long time supposed that these good qualities were in a great degree balanced by the extreme tardiness of his movements. A proper attention to his training has convinced us how much this supposition was founded in error, and we may now boast a race of working oxen, which for the despatch, neatness, and efficiency with which they perform their labor, are certainly not surpassed, and most probably not equalled in any part of the world. Such, my friends, are a very few of the improvements which have taken place in our Agriculture, since the establishment of our agricultural societies and Cattle Shows. In what way these societies and shows have contributed to these improvements, is a point which has been so fully and ably handled in this place on former occasions, as to leave little room for any farther illustration. Indeed, I think a candid mind will require little other proof of the advantages resulting from Agricultural Societies, to the great farming interest of this state, than that which can be drawn from their very existence. Twenty years ago there was scarcely a County Society in this Commonwealth. At present, these societies exist, with scarcely an exception, in all our farming counties. Whence this increase? Was it owing to a sudden impulse of popular feeling? No, for these societies rose into being in gradual succession. Can it be ascribed wholly or principally to the encouragement afforded by the commonwealth? That encouragement is highly creditable to the liberality of the Legislature, for it has proved amply sufficient to effect the desired object, and has been uniformly given with a promptness, which evinced that more would have been done, had more been necessary. But the sum which any society can receive annually from the treasury, is limited to an amount equal to the revenue derived by such society from its own funds, and can in no case exceed six hun-

dred dollars. This bounty, liberal as in fact it is, manifestly furnishes of itself a very inadequate motive for the establishment of an Agricultural Society. Consider too the character of the people among whom these institutions have sprung up. It is among the farmers of Massachusetts, a race not given to change, men proverbially and wisely cautious, holding on to their settled opinions and habits with a grasp, which yields to nothing but the force of cogent reasoning. To what else then can we ascribe the multiplication of these societies than to the existence among our intelligent farmers, of a general, a deliberate, and may we not add a just conviction, of their utility? There is, however, one objection to these institutions, which though it prevails much less extensively than formerly, yet still retains its hold on many worthy minds, and is much oftener felt than avowed. It is said that Agricultural Societies and Shows merely furnish an opportunity for theorists to display their fancied discoveries, and that their existence is of little importance or benefit to the practical farmer. My friends, no one respects more than I do the intelligent practical farmer, if indeed any one can be an intelligent farmer, without some degree of theory. No one is better convinced, that more is often learned from a few shrewd remarks from such an individual, or from a single day's observation of his course of farming, than from volumes of essays, and hours of declamation from a mere theorist in agriculture. No one is more aware, that there have been, and now are among our farmers, men gifted with talents of the highest order, which would have raised them to distinction, had such been their object, in any walk of human industry. But it is for this very reason, that I would uphold Agricultural Societies and Shows. For, let me ask, what becomes of the sterling wisdom of these practical men? Something of it may be communicated to their children or their immediate neighbors, but the greater part goes down with them to the grave. 'Certain it is,' says an ancient sage of the law, 'that when a good lawyer dieth, much learning dieth with him;' and the remark

will apply with equal truth to the skill and information of the good farmer.

My friends, I would arrest this valuable information before it passes away. I would induce the possessor of it to visit our shows and contend for our premiums! I would have it communicated by his conversation and simple statements, to our societies and through them to the public; I would have it brought into the great channel of intelligence, the press, and diffused throughout the whole community. The mere writer of agricultural essays has no need of societies and shows. His facility of composition enables him to place his thoughts on paper in the solitude of his library, and the press is always open to his effusions. But if we would render the intelligence and experience of the true practical farmer either properly creditabe to himself, or properly beneficial to his fellow-citizens, I know of no means by which it can be so well effected, as by those which I have mentioned.

My friends, I have spoken of the benefits which have resulted to the *Agriculture* of our state from the establishment of Agricultural Societies and Cattle-Shows. But I believe we should do great injustice to the subject, if we confined our attention to this class of benefits only. There are others of a political or rather moral nature, of no mean importance. The youngest of us may remember the time, when this commonwealth was divided into political parties by questions of the most momentous and most exciting character; when the contest was carried on between those parties with the activity, the determination and fervor, which might have been anticipated from their nearly equal forces, from the general intelligence of those who composed them, and from the importance of the subjects in dispute. Men, who personally respected each other, were ranged on opposite sides in battle array, and many hard thoughts were entertained, and many hard words exchanged, which were deeply regretted when the season of excitement had gone by. These times have happily passed away, but our community still is, and always will be, divided on questions less exciting per-

haps than those which once existed among us, but still highly important and interesting. And yet, my friends, we nowhere find the slightest vestige of party spirit in the proceedings of this, or of any Agricultural Society. So may it ever be, so we may pronounce after our past trying experience, will it ever be.

In Agriculture we shall ever find a subject of harmonious interest, and how consoling is the thought, that however we may contend elsewhere, here at least we shall be at peace; that here is one topic which can divide the opinions without severing the friendship of good men — one green spot where the demon of party violence can never intrude — one most interesting object of human inquiry which we can investigate and discuss with all our heart and soul, not only without forgetting, but without being tempted to forget, that we are brethren. Yes, my friends, if ever all lines of party division fade away — if we ever realize that we are all of one blood, nourished at the bosom of one common mother, it is when the interests of Agriculture are in question.

But it is not political prejudices alone, which Agricultural Societies have tended to suspend and soften. They have done much to alleviate others equally dangerous at least — I mean those of a local nature. In this respect more has perhaps been effected by the Massachusetts Society, than by any other in the commonwealth, not from any superior merit in its members, but simply from the force of circumstances. Owing to the manner in which it is composed, and the situation of the place where its Shows are held, it has served as a connecting link between the city and the interior.

To you, my friends, I need not say that the interests of these great portions of our community are one, and that any jealousy on either side is as impolitic, as it is illiberal. I believe that this important sentiment is constantly gaining ground, that if impressions of an opposite kind exist anywhere, they are founded in misconception, and are rapidly passing away. This is indeed a *pleasing* opinion, but it may be entertained on far better grounds. Every day's observation convinces me that it

is not a grateful error but a sober truth. Now what can better promote harmonious feelings between different portions of the state; what can more tend to strengthen, diffuse, and perpetuate them, than that friendly interchange of sentiments, upon subjects of deep and immutable interest to us all, which results necessarily from Agricultural Societies and Shows? He must be singularly inexperienced or singularly unobserving, who has not seen how often a little personal intercourse, or a word in season has caused the grossest misconceptions and prejudices to vanish, like the morning cloud, and if this society has conferred any benefits on the public, that to which I am now referring is certainly one of the greatest.

Permit me now, my friends, to submit to you a very few practical suggestions. The first relates to insects. These are evils to which our Agriculture is presumed to be more exposed, than that of any portion of the Old World.

These animals are probably bred in most cases in our vast forests, and as they are driven out from their ancient haunts by the progress of cultivation, descend in countless armies upon our fields and our gardens. Whatever be their origin, their prowess speaks but too well for itself. The beautiful and active Beetle which attacks the Locust tree, a tree combining rapidity of growth, with hardness of wood to a most singular degree, this insect I say, has robbed our country of valuable timber to the amount of millions of dollars.

The Borer which mines into the solid trunks of our Apple trees, and the Canker-worm, which consumes their foliage like a flame of fire, are equally destructive, within the circle of their ravages. It is true that our efforts to extirpate these minute but powerful enemies, as well as others of a similar description, or even to check them to any considerable degree, have hitherto been almost unavailing, but the object is one of the utmost importance, and should not be relinquished till the greatest research and exertion have been exhausted.

The next suggestion which I shall offer, relates to the cultivation of delicate fruits and of ornamental flowers. These are delicious luxuries; but in the first place they are innocent and salutary, and in the next they are within the reach of the great mass of our agricultural community. The farmer who possesses a moderate competency, may cover his table and decorate his house with fruits and flowers of the highest degree of flavor and beauty, in a state of freshness and perfection, in which they are seldom enjoyed by the most opulent inhabitants of the city. And all this with a small expense of time and exertion. A little attention in the right place, a due vigilance in improving the fleeting opportunities of time and season which nature offers us, a proper degree of minute, but light and interesting labor, and the business is done. I should say more on this topic, had it not engaged the attention of a kindred society, whose efforts, thus far, have been crowned with a success beyond all expectation.

The last point which I submit to your consideration, is the preservation and culture of our forest trees. My friends, in this respect, if in no other, we have indeed a goodly heritage. It is stated by the highest authority on such subjects, F. A. Michaux, 'that the number of sorts of American forest trees, whose growth amounts to thirty feet at least, is not less than one hundred and thirtyseven, of which ninetyfive are employed in the arts; while in France there are only thirtyseven which grow to that height, of which eighteen only are found in their forests, and seven only of these are employed in civil and maritime architecture.' We are fast consuming these rich treasures of our woods, and I fear that our prodigality will be followed at no distant period with the usual consequences of prodigality in other cases. Fuel has already become scarce in our seaports, a subject of serious consideration to those who reflect, that the sufferings of the poor in this country are probably greater from the want of this article, than from all other causes united.

The valuable timber, also, on which we depend for our domestic architecture, and for our public and our mercantile marine, is rapidly passing away without any earnest or extensive efforts to reproduce it. The live oak of our southern states, considered the best material in the world for ship-building, will probably be entirely swept away in half a century, and our own white oak may follow, after no very long interval. Independently, however, of all considerations of utility, the culture of our finest forest trees merely as majestic ornaments to the face of our country, well deserves our utmost care.

What can be a more noble object for instance, than one of our full grown American elms, a tree denominated by the high authority already quoted, 'the most magnificent vegetable production of the temperate zone.' Where can we behold a more striking union of strength and grace than in its massy trunk and drooping foliage? What is there in the most classical specimens of architecture in our city, beautiful as indeed they are, to which the eye turns with more pleasure, than to the triple row of elms which adorns our Mall? Who has ever contemplated those solid colonnades and shady arches, without grateful feelings towards the unknown individual to whose taste and wisdom we owe them? Who doubts that his name, had he chosen to record it, would have been far better perpetuated by such a memorial than by the proudest monument of brass or marble.

My friends, is there not something elevating in the thought, that we can thus contribute to the happiness of generations yet unborn, that we can thus imitate, in some humble measure, the comprehensive benevolence of that Providence which plans, not for years, but for ages.

The season which is just closing, my friends, has been uncommonly propitious. We have been exempted from all visitations of drought, and have enjoyed a succession of seasonable rains, to a degree seldom experienced in our bright and dry climate. Our fruit trees have borne with unusual abundance;

our crop of Indian corn is good, and that of potatoes whether we regard quantity or quality, uncommonly fine.* Above all, our grass, a product of more importance to this state than all other products united, has proved, for the fourth year in succession, remarkably luxuriant. This abundance has been attended, as might have been expected, by a diminution in the market value of hay, but it should be recollected on the other hand, that our farmers have been enabled to retain and rear much valuable stock, which must have been sacrificed in a dry season.

It is true, that within the last two years, our manufacturers and merchants have been visited with severe trials, and that our farmers have not been wholly exempted from the weight of the depression under which the rest of the community have labored. But such a complete exemption could not be expected in a country, where the great interests of Agriculture, Manufactures and Commerce, are so intimately united, as in ours. It may safely be affirmed, however, that our farmers have suffered far less from the evils to which I allude, than any other large or important portion of our people, and this from the very nature of their calling. The merchant or manufacturer may be robbed of the reward of his labor, by changes in the foreign or domestic market entirely beyond his control, and may wind up a year, in which he has done everything which intelligence and industry could do to insure success, not only without profit, but with an actual diminution of capital. The strong arm of mechanic industry may be enfeebled or paralyzed by the prostration of those manufacturing or commercial interests to whose existence it so essentially contributes, and on whom in turn it so essentially depends. But what has the intelligent and industrious farmer to fear? His capital is invested in the solid ground, he draws on a fund which from time immemorial has never failed to honor all just demands, his profits may be diminished indeed, but never wholly suspended; his success de-

* I have since been informed that this last assertion is not universally correct, and that in many places the crop of potatoes is deficient in quantity.

pends on no mere earthly guarantee, but on the assurance of that great and beneficent Being, who has declared that while the earth endureth, seed time and harvest shall not cease.

I shall close with a few remarks on the immediate business of this meeting, the distribution of prizes. It is obviously a difficult and delicate task, to decide between the claims of competitors deeply interested in the result, and of nearly equal merits. The labors of the trustees in this part of their duty, have been greatly alleviated on the present, as on former occasions, by the assistance of those intelligent and respectable individuals, who have consented to be associated with them on committees. It has ever been the desire and aim of those committees to arrive in each case at a just decision, and it is gratifying to reflect, that their exertions to this end have always been duly appreciated. Whatever may have been said, sometimes doubtless with justice, of their *errors*, I am not aware that their impartiality and fairness have ever been impeached. We entertain the fullest confidence that the decisions now to be announced, will be received by the public in general, and by the unsuccessful competitors in particular, in the same fair and liberal spirit which has been manifested on all former occasions.

COMMITTEES OF THE BRIGHTON SHOW.

EXECUTIVE COMMITTEE.

Benjamin Guild,
Israel Thorndike, Jr.

ON FAT CATTLE.

Gorham Parsons, *Chairman*,
Col. Bethuel Penniman.
Abner Wheeler.

COWS, HEIFERS, BULLS, AND BULL CALVES.

John Welles, *Chairman*.
Nathan Adams, Jr.,
Capt. George Smith.

SHEEP AND SWINE.

John Heard, Jr, *Chairman*,
Col. Samuel Jaques,
Thomas Williams.

PLOUGHING WITH TWO YOKE CATTLE.

John Prince, *Chairman*.
John Northend,
Ebenezer Heath.

PLOUGHING WITH ONE YOKE CATTLE.

E. H. Derby, *Chairman*.
Col. Adams,
Timothy Corey.

WORKING CATTLE.

Luke Fiske, *Chairman*.
Gen. Aaron Capen,
Samuel Brooks.

MARSHALS.

Capt. Isaac Cook,
Capt. William Prentiss,
Col. Wm. H. Spooner,
Col. John Tyler.

MANUFACTURES.

Richard Sullivan, *Chairman*,
Robert Waterston,
Joshua Clapp.

INVENTIONS.

Gorham Parsons, *Chairman*,
Daniel Treadwell,
David Moody.

BUTTER, CHEESE, AND CIDER.

Benjamin Guild, *Chairman*,
John C. Gray,
Israel Thorndike, Jr,
Isaac P. Davis,
Benjamin Pollard

GRAIN, VEGETABLES, CROPS, &c.

Peter C. Brooks, *Chairman*,
William Prescott,
James Jackson.

FARMS.

William Prescott, *Chairman*,
Peter C. Brooks,
John Welles.

AUCTIONEERS.

Samuel F. Coolidge,
Richard Warren.

OFFICIAL REPORTS

OF THE COMMITTEES OF THE

MASSACHUSETTS AGRICULTURAL SOCIETY,

AS ANNOUNCED AT THEIR ANNIVERSARY

HELD AT

BRIGHTON, OCT. 20th, 1830.

REPORT OF THE COMMITTEE ON FAT OXEN.

The Committee appointed to award Premiums on Fat Oxen, have attended the duty assigned them and Report as follows:

To Dexter Fay of Southborough, County of Worcester, they award the first premium for his fat ox, six years old, from Imported Bull Holderness, weight of ox 2477 pounds, $25.

To Simon Ward of Charlton, County of Worcester, the second premium for one of his fat oxen eight years old, from Imported Bull Holderness; the ox to which the premium is awarded has the most white on the back; weight 2312 pounds, $20.

To Asa Rice of Boylston, County of Worcester, the third premium for his ox seven years old; weight 2380 pounds, $10.

Evidence was produced of the manner of feeding, and the expense of fatting the cattle, which was satisfactory to the committee.

Joseph Estabrooks of Royalston, county of Worcester, entered for exhibition only, a pair of very fine and well fatted oxen, they were not raised in this state, and therefore not entitled to premium by the rules of the society, but were highly

estimated by the committee, they were six years old, and the pair weighed 4634 pounds.

Henry Chapin of Waltham, entered for exhibition only, a pair of oxen from imported Bull Denton, and Cows of the Teeswater or short horn breed; they were very handsome, fine turned cattle, five years old, in prime condition, and raised by Theodore Lyman, Esq. of Waltham.

Silas Billings of Hatfield, county of Hampshire, entered a pair of well fatted oxen — but the committee had but three premiums to award.

Samuel Bowen of Adams, county of Berkshire, entered for exhibition only, a pair of handsome well shaped oxen; and when the manner of feeding on hay and grass only, which was stated to the committee were taken into view, they were considered in very good condition.

Jacob W. Watson of Princeton, county of Worcester, entered for exhibition a fat cow, which attracted attention.

William Winn of Burlington, county of Middlesex, entered for exhibition a pair of twin oxen, Cœleb's stock; they were well formed cattle and in good condition. The committee were much pleased with the exhibition of fat cattle, and think it equal, if not superior, to the best that has been made since the first establishment of a Cattle Show in Brighton.

All which is submitted by

GORHAM PARSONS,
BETHUEL PENNIMAN,
ABNER WHEELER,
} *Committee.*

BRIGHTON, OCT. 20th, 1830.

The pair of young oxen, sent by Theodore Lyman, Esq. for exhibition only, were remarkable for their fine symmetry and just proportions.

REPORT OF THE COMMITTEE ON COWS, HEIFERS, BULLS AND BULL CALVES.

The Committee on Bulls, and Bull Calves, Cows and Heifers, were gratified to perceive the improvement in the value and appearance of the stock exhibited this year at the Brighton Cattle Show. The number of fine animals, with the spirit manifested by the great assemblage of Agriculturists, are pleasing indications of the improvement which excitement and honorable competition will effect.

True it is that imported animals of great name do not call crowds round a pen as was once the case — nor are fine animals so rare as in years past.

But your committee think that our discerning farmers will be gratified to notice the advanced grade in the improvement of stock.

They will be pleased and led to useful practice by observing that not only from the imported breeds of cattle is an obvious benefit derived — but their Report will show that a judicious selection of native stock is moving forward in equal progress, and to like advantage.

Craving indulgence for these observations, which seemed due to the occasion, your committee proceed to announce the premiums, which they award as follows.

BULLS.

The committee award the first premium on bulls, to Mr. G. W. Watson, of Princeton, for his young bull one year and five days old. $30.

This was a cross from the imported breed, and a beautiful animal, weighing 987 lbs. It will be seen that he but little exceeded the age proposed for bull calves.

But the committee were governed by the letter of the rules, and hope the distinguishing proportions of this animal may be retained as his figure enlarges.

The second premium they award to Mr Peter W. Page, of Shirley, $20, for his bull nineteen months old, weighing

1160 lbs. partly of the short horned and partly of what is called the Westminster breed, so remarkable for the fleshy hind-quarter, and said originally to have been of foreign derivation. This animal was of good size, figure and proportion, and may be exported to reward Mr Page's attention to stock.

To Mr Asa Rice, of Worcester, the third premium, $10, for a fine bull two years and five months old, a cross of Holderness or native stock. The beautiful color and hair of Holderness, with many approved qualities are remarked in his descendants.

The committee recommend a gratuity of ten dollars to Mr Abraham Washburn, of Bridgewater, for his fine white bull, two years and seven months old, weighing 1498 lbs. This animal was of large growth, good figure and well tempered, with many marks of imported blood.

He was a cross from that fine animal Denton. With the opinions of dislike held by our countrymen, it is to be regretted that the short horned stock so often incline to this color.

Having been driven in a short time to the Show, this animal appeared to less advantage.

There were several bulls exhibited for premium deserving of commendation.

Mr George Morse, of Roxbury, exhibited one which excited the attention of the committee. He was a cross from Admiral and a valuable animal.

For exhibition the Show was indebted to Mr Thomas Williams, of Noddle's Island for a view of his full blood bull Cicero, 22 months old, of fine figure and promise. Col. Sanger of Sherburne, sent a fine animal of this description.

The Show was in like manner indebted to Mr John Perry, of Sherburne, for a view of many of his high breed.

BULL CALVES.

To Noah Johnson, for his bull calf six and a half months old, weighing 644 lbs. of foreign cross and good appearance, $15.

There were no other bull calves that were thought to deserve a premium. There was a bull calf of reputed excellent breed for milk, and of the same stock with Mr Saunderson's cow, to which was awarded the first premium.

But though fair to view, your committee did not feel authorized to award a premium. This he may perhaps merit hereafter.

ON MILCH COWS.

To Nathan Saunderson, of Waltham, the first premium, $30.

This cow was in her origin of imported blood, though not well explained, 6 years old, and had given 20 quarts of milk, and for some months an average of 18 quarts, and from her week's milk 14 lbs. of butter had been made.

To Leander Hosmer, of Bedford, the second premium, $20.

This cow's milk made 14 lbs. of butter a week, and satisfactory evidence was given of her being a very productive animal; of native stock.

To John Ballard, of Framingham, the third premium, $15.

This was a well formed animal, and of valuable milk qualities. She had for several months yielded over 12 lbs. of butter a week. Her stock was mainly native.

Other fine stock was exhibited for premium. A cow of Mr Aspinwall, of Brookline, was much admired and deservedly so; her figure was beautiful, and her product might perhaps have equalled that of any other animal exhibited at the Show; but an excessive feed on apples reduced her milk soon after calving. For some days she gave at the rate of 13 lbs. of butter a week. She is said also to be in milk nearly all the time, and the committee doubt not that under other circumstances this animal may hereafter receive a high premium.

Mr Saunderson, Jun. of Waltham, Col. Metcalf, of Cambridge, Mr Wyman, of Shrewsbury, Mr Adams, of Newton, Col. Taylor of Quincy, Mr Bemis, of Waltham, and Mr Sanborn, of Charlestown, either for premium or Exhibition added to the merits of the Show.

HEIFERS IN MILK.

The 1st premium to the Rev. Henry Colman, of Salem, $15.

This extraordinary heifer was of native stock. She calved 2d of Sept. last, and had given at some time when measured, 16 quarts in a day. But it would seem the quality of her milk must be superior, for in ten and a half days there was had therefrom 18½ lbs. of butter, and at other times on trial, 14 lbs. of butter a week. Most of this appears by the certificate of her former owner Mr L. Hazelton, Jr, of Haverhill.

The second premium to Seth Davis, of Newton, for a native heifer, 28 months old of great product and promise.

HEIFERS NOT IN MILK.

The 1st premium to Samuel Fisk of Saugus, for a beautiful heifer out of Bolivar, $12; her age was 8 months 5 days, weighing 584 lbs. and of fine figure.

The second premium to Mr William Furness of Medford, for his native heifer, $10. Its age was 7 months and 3 days — its weight 519 lbs. This animal did justice to the care taken of it, and promised to reward it.

To John Prince, Esq. of Roxbury, the 3d premium, for his heifer, $8. This handsome heifer was of the short horn breed principally, with somewhat of the Bakewell and Alderney blood.

To Mr Thomas Williams, for his heifer from Cœlebs, called Isabella, the 4th premium, $6. This was a high bred heifer, and wholly of imported blood.

There were many heifers that were ornamental to the pens both for premium and exhibition.

Hon. Luke Fiske, of Waltham, Stephen Higginson, Esq. of Cambridge, Mr N. Brown, of Waltham, Capt. Mackay, of Weston, Mr Watson, of Princeton, Mr Bemis, of Waltham, Mr Dudley, of Brighton, Mr May, of Roxbury, Mr Phillips, of Lynn, Mr Swift, of Newton, and Mr Williams, of Noddle's Island, (in

a fine heifer from Bolivar,) with others, gave many good instances of the improved condition of our stock.

The productiveness of the Milk animals in fact appeared to your Committee to exceed what has formerly been exhibited. Of the improvement in the handsome show of heifers mention has been made. Of the Bull, there were some fine specimens; of calves there were few, and one premium only was awarded. This is not so much to be regretted, as these animals are generally so loaded with fat as to make it difficult at so early an age to decide on form or properties.

All which is submitted.

JOHN WELLES,
GEORGE SMITH,
NATHAN ADAMS, Jr. } *Committee.*

REPORT OF THE COMMITTEE ON SHEEP AND SWINE.

The Committee, who were appointed to award premiums upon Sheep and Swine, have attended the duty assigned them, and request leave to state —

That they proceeded to the discharge of their duty, by first visiting the pens in which the swine were, and they found them well filled; and after a careful and thorough examination of their several points, qualities and properties, they awarded

To John Mackay for the best boar . . .	$12
" " " next " . . .	8
" " " best sow . . .	12
" " " next " . . .	8
" Isaac Robbins for the next best sow . .	5
" John Mackay for the best pigs, not less than two in number, nor less than four months old, nor more than eight	10
" Isaac Robbins for the next best . .	5

They then visited the sheep pens, and were much gratified to find in them several lots of Dishley or New Leicester breed of sheep. One fine ram and three ewes belonging to Enoch Silsby, of Boston, of pure blood, imported from England.

A buck lamb, six months old, belonging to John Prince, of Roxbury, from the superior Dishley ram of Col. S. Jaques, and two ewe lambs 6½ months old, from imported stock.

Two Dishley ewes and two yearling rams, belonging to Thomas Williams, of Noddle's Island. They were from the imported ram of Col. S. Jaques, who obtained the Society's premium the last year, and was presented this year for exhibition. The committee were not insensible of the responsible and delicate situation in which some of its members were placed to discharge their duty satisfactorily, but after a minute and close examination of the sheep, their form, shape, size, and other peculiar properties, they unanimously award

To Enoch Silsby for the best Dishley ram . . $30
" " " " ewe . 30

And it is with great pleasure the committee observe the attention of gentlemen turned in favor of the Dishley Sheep. They consider them an important and valuable acquisition to the country, and among the farmer's best stock. They will yield more profit than other sheep from the fleece, and their carcass is remarkably well calculated for the market.

There were two pens filled with native wethers. One lot was owned by E. T. French, of Milton; and the other by P. P. Peirce, of Lexington. Some of those that were offered by Mr Peirce, were large and in good condition, but there were not a sufficient number of such extraordinary quality as to justify the committee to award the premiums.

JOHN HEARD, Jr,
SAMUEL JAQUES,
THOMAS WILLIAMS,
} *Committee.*

Specific character of the Dishley or New Leicester breed of sheep. Heads clean, straight and broad; bodies round, or barrel shaped; eyes fine and lively; bones fine and small,

pelts thin; wool long and fine, well calculated for combing, and weighing upon an average eight pounds per fleece, when killed at two years old. Fatten kindly and early, well calculated for market, thriving in pastures that will scarcely keep other sheep, and requiring less food than others. Tolerably hardy and vigorous.

REPORT OF THE COMMITTEE ON PLOUGHING WITH TWO YOKE OF OXEN.

The Committee on the Ploughing Match with two Yoke of Oxen, report—

That eleven ploughs were duly returned for *this* match, (a greater number than were ever before entered at Brighton,) that on calling the list at 9 o'clock, thirteen ploughs were offered for competition, but as only 11 lots were assigned, the two last on the list were under the necessity of retiring from the contest.

After a most careful examination, the committee unanimously awarded the first premium to Abiel Wheeler, of Concord $15

	Abiel Wheeler, of Concord, as ploughman	8
	Jacob Jepson, driver . . .	4
2d premium,	Samuel Hoar, 2d, of Lincoln .	10
	" as ploughman . .	5
	Franklin Wheeler, driver . .	3
3d premium,	G. M. Barrett, of Concord . .	6
	" as ploughman . .	3
	Ira Fisher, driver . . .	2
		$56

The shortest time occupied by any team was 30 minutes; longest time " " 41½ "

Greatest number of furrows to any lot was 21

Fewest " " " 17

except the lot No. 1, being about a *rod shorter* than the rest from the shape of the field, required to be a little wider, and 23 furrows were made — the size of the lots were 20 rods long and 20 feet wide, making about 24 rods to each.

Every plough used was of Cast Iron, and were chiefly of *Tice's* make (all that obtained premium were of his patent;) the whole work was excellently well performed, and much difficulty was experienced in selecting for the *three* premiums; the committee would gladly have had it in their power to have awarded *eleven*.

It seems necessary to give their reasons for deciding as they did, and the rules they established — which were, that cattle should not be *hurried*, as *goodness of work* was the object, to be ploughed not less than $5\frac{1}{2}$ inches deep, and the furrow slice to be cut *narrow*, and laid as *flat* in it as was possible — the reason of the committee was this, that in *this* part of our country very little land is cultivated in *winter grain*, and the object of *fall* ploughing, is to have the sward rotted for spring cultivation, which they think best effected by this mode; as if laid on edge, and so left till spring, much grass comes up in rows in the hollow of the furrows — and on the *flat* method it is all equally covered, and no grass grows.

The committee well know that in England, (and probably in our own country, where winter grain is cultivated on *sward* land) they adopt the *ridge* furrow slice, as by this means, in broadcasting their seed, it naturally falls into the lowest part of furrows, and then by harrowing, the seed is deeper covered, and comes up in *rows* as they wish, giving a better chance for a free circulation of air in its after growth, and to clean, by hoeing if they wish, and also probably some saving of seed — having nearly the same effect as sowing by drill machine.

The first ploughing match planned in the United States, was at Brighton, in October, 1817. At that match, *not one cast iron mould board plough was in our vicinity, if in the state* — and at the present Show *none but of cast iron* were in our match.

This shows in the clearest possible view, the immense improvement that our Cattle Shows, and particularly the ploughing matches, have produced in this most important Agricultural Implement.

Respectfully submitted by

JOHN PRINCE,
EBEN. HEATH,
JOHN NORTHEND,
} *Committee.*

REPORT OF THE COMMITTEE ON PLOUGHING WITH ONE YOKE OF OXEN.

The Committee, consisting of E. HERSEY DERBY, DANIEL ADAMS, and TIMOTHY COREY, to whom was assigned the *Ploughing Match with one Yoke of Cattle*, Report —

That the land to be ploughed was divided into lots of about 24 rods each.

There were eleven competitors for the premiums. The ploughs generally of the improved kinds, and four of them were without drivers.

As the principal object of the ploughing match was to show good work, and skill in the ploughmen, they were particularly directed not to hurry their cattle, — shortness of time being no object in comparison with good work, — that attention would also be paid to the appearance, and docility of the cattle, and the management of the driver. The ploughing to be not less than five inches deep, and that narrow furrows, laid lapping on each other, would be preferred to wide and flat ones.

Under these regulations, the first lot was ploughed in 33, and the last in 46 minutes.

The committee state with great pleasure, that the work in every instance was of a superior order; that there was so little difference in most of it, they found it extremely difficult to decide to whom they should award the premiums. After great deliberation, they award as follows:

1st premium, to Moses Whitney, of Stow .	$15	
G. P. Meriam, as ploughman .	8	
Moses Whitney, as driver	4	
		$27 00
2d premium, to Otis Meriam, of Concord, aged 17,	$10	
Same as ploughman .	5	
Abel Meriam, aged 11, as driver .	3	
		$18 00
3d premium, to John Tilden, Jr, of N. Bridgewater	$6	
E. Dunbar, aged 18, as ploughman	3	
Same as driver	2	
		$11 00

E. Hersey Derby, *Chairman.*

Brighton, Oct. 20, 1830.

REPORT OF THE COMMITTEE ON WORKING OXEN.

The Committee on Working Cattle, consisting of Messrs Luke Fiske, Aaron Capen, and Samuel Brooks, having attended to the duty assigned them, ask leave to report.

Twenty yoke of Cattle were regularly entered for the Society's premiums, and they did much credit to the farmers who offered them.

The committee after trial of their power and training, and a comparison in reference to age, strength, form, equality of match, and other general properties, were unanimous in their awards as follows:—

To Benjamin Woodbury of Sutton, his cattle four years old, first premium, ... $25 00

To Leonard Woodbury of Sutton, his cattle four years old, second premium, ... 20 00

To Luther Whiting of Sutton, his cattle four years old, third premium, . . . $15 00

To George M. Barrett, of Concord, his cattle four years old, fourth premium, ... 12 00

To Henry Barrett, of Concord, his cattle four years old, fifth premium, ... 8 00

Many other cattle were very deserving and performed well, and in other years would have obtained premiums; but the superiority of the Show, in this respect, over former years, excluded them.

All which is respectfully submitted.

Per Order, LUKE FISKE, *Chairman.*

BRIGHTON, OCT. 20, 1830.

REPORT OF THE COMMITTEE ON USEFUL INVENTIONS.

The Committee on Useful Inventions report —

That Mr Hale of New York, by J. R. Newell, entered for premium Hale's Patent Pump.—This pump is of continuous rotatory action, the power being applied to a crank. This very compact hydraulic machine combines the actions of the sucking and forcing pumps; and is even capable of throwing water effectively as a fire-engine; the arrangement and action of the valves is original and highly ingenious; the committee, however, forbear attempting a description of these, as they could not be made intelligible without drawings. Perhaps the cost of this pump. compared with that of the ordinary construction, will render its application in some degree limited; yet the committee have no hesitation in expressing an opinion, that it is superior to any rotatory pump heretofore constructed. As this invention was not made within this commonwealth, and moreover the inventor has omitted to furnish certificates of its actual use, the Committee are restrained by the regulations of the Society from awarding a premium which in their opinion it deserves.

John and Horace M. Pool, of Easton, County of Bristol, entered for premium, several Geometrical Protractors, of a new construction, by which lines may be drawn with great facility, and at any required angle to the side of the tablet or drawing board, which in this case forms a base line; it is therefore a most convenient instrument in forming plans of surveys, an operation of primary importance to the farmer, considering the simplicity of the instrument, and the ease with which it may be applied, the committee award to the Messrs Pool, a premium of $15 00.

The same gentlemen, the Messrs Pool, presented for exhibition, two steel Drafting Scales and a Drafting Square, the workmanship of which was executed in the best manner and equal to imported articles of the kind.

Amasa Dunbar of Sharon, County of Norfolk, entered for premium a machine for forming Boot Fronts; good certificates of its having been tried and found useful were produced; the workmanship was well executed, and it did not appear complicated or likely to get out of order; but in the opinion of the committee, was calculated for large establishments, and too costly for general use — and they do not award a premium.

Joseph Hutchinson of Dorchester, entered a Dash Churn for premium, but it did not appear to the Committee to be any improvement on the common churn in general use, and do not award a premium.

Daniel Chandler of Lexington, County of Middlesex, entered for premium a Double Harrow, and produced a certificate of its having been used and approved for harrowing among trees, on rocky and uneven ground, and operating in sharp hollows or valleys, when the two sides would rise, and permit all the teeth to come in contact with the earth; the workmanship was good; it was made in the common heater shape, in two parts, divided longitudinally, and hung with two strong hinges in the centre, for the purpose of turning up one half and placing

it on the other, by which means it is made fit to pass in narrow places, between trees, stumps and rocks.—When turned up or doubled over, one half the teeth are not in use. The committee were of opinion that strong handles like those of a plough, passing through the hind bar of the harrow, braced in the same manner as plough handles, answer all the purposes of Mr Chandler's harrow; with the handles a person could raise up either side of the harrow — raise or depress either end, and make the whole harrow bear on small uneven spots of earth, light it up if the teeth came in contact with a root or fast stone, and generally give a smoother and better pulverized surface to a field. In harrowing in seed the advantage of handles must be obvious to every farmer that makes use of them, or that sees them used; the double harrow has been in use in England for many years; hardly a book on Agricultural Implements, but what contains plates of them, not precisely of the shape of Mr Chandler's harrow, not however varying materially. It can be used, the two harrows together, or separate; and when separated, being lighter, make two teams; they are readily put together and as readily detached. Therefore the committee do not award a premium.

The preceding entries were all made in season, agreeably to the rules of the Society, and a list containing those entries only handed the committee by the secretary, at the time of their meeting on the 19th, to make the examination. The next day the committee found other articles had been entered and placed in the Society's rooms on that day; viz. — a Washing Machine, by Mr Shepherd of Watertown; three Ploughs, by Mr Prouty of Hanover, County of Plymouth, who appears to be only the manufacturer of the iron work; his certificate, which has many respectable signatures, mentioning its having been, used and approved, has, in the printed caption, Hitchcock's Patent Ploughs, manufactured by D. Prouty. No application by the inventor, so that no question as to premium could have arisen, as regards this entry. A Double Plough, with two moulds of iron and two shares, two sharp lips behind,

on bottom of moulds, said to be made for ploughing between corn, but no person appeared to explain to the committee.

Messrs Nourse & Co. of Sherburne, introduced four Ploughs, but the committee could not perceive any new improvements in their construction. Their certificate stated they had been used and highly approved.

Dr Andrew Nichols, of Danvers, county of Essex, presented two cast iron Harrow Teeth, of a new form differing from any harrow teeth in common use. In a letter to the Trustees, of the 19th, he gives a particular description of these teeth; the superiority over any other in use, with a certificate from a person that had used a harrow with his cast iron teeth, and approved of it highly. The committee will request the Trustees to publish Dr Nichols' letter to them in the New England Farmer, and to cause one of his harrow teeth to be deposited in the Agricultural Warehouse, under the same roof of the New England Farmer Office, for public inspection; but perhaps it may be well for the committee to observe that the entry made by Dr Nichols, for premium, is for his improved harrow teeth, of *cast iron*. The distance of most farmers from iron foundries, the difficulty of renewing the teeth when broken, the loss of time in replacing them, and the probable expense that would attach, would have prevented the committee from awarding a premium, had the regulation prescribed for making the entry, been strictly complied with. All which is submitted by.

GORHAM PARSONS,
DANIEL TREADWELL,
DAVID MOODY. } *Committee.*

BRIGHTON, OCT. 20, 1830.

The following is Dr Nichols' letter alluded to above.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN — Believing that the harrow might be greatly improved without any increase of expense, I last spring formed a model, and had a set of teeth cast at the Danvers Foundry

which were immediately set in a frame and put in use on my farm in Middleton. They fully answered my expectations in everything but strength, being cast of hard brittle iron, and too slender in that part where the greatest strength is required, *to wit*, the part nearest the stock, which is not supported by it. Several of them were broken among large roots and fixed rocks. I then altered the model and had teeth cast of softer and stronger iron, (Scotch iron) such as are herewith exhibited; none of these have been broken. The projection from behind the point of the tooth is designed to receive a brace, should the strength prove insufficient without one. I have not however found it necessary to brace the teeth of my harrow. The notch near the top is designed to secure the tooth in the frame by a pin, which together with a wedge driven in behind, filling the trough of the tooth, readily secures it, and at the same time leaves it in a situation to be easily taken out and set in a smaller frame for harrowing among corn, &c. With the form exhibited I am well satisfied, believing it combines a good degree of strength with a saving of metal. But very possibly it may still be improved, and as no patent will be taken out for it, every farmer will be at liberty to have it formed to suit himself. Each tooth, at seven cents per pound, costs about 30 cents, — each tooth moves five inches of earth. Eleven teeth forms my harrow, which moves and pulverizes very completely a strip of land 55 inches wide; $3,30 the cost of the teeth, which is I think much less than the cost of the common teeth for a harrow of this size.

I think it not extravagant to say that with the same ox or horse power, most tillage land may be benefited twice as much as it can be by the use of the common harrow in the same time, and that should even one tooth on an average be broken daily, it would still be the most economical harrow in use. In such a result, however, which is not to be apprehended, it would be cheaper to make them of wrought iron.

Yours respectfully,

ANDREW NICHOLS.

DANVERS, OCT. 19, 1830.

REPORT OF THE COMMITTEE ON BUTTER, CHEESE AND CIDER.

The Committee on Butter, Cheese and Cider at the Brighton Show respectfully Report —

That the only articles offered to them for premiums were Butter and Cheese. That of the several entries, more than one half would not be considered Butter of uncommon excellence, either in flavor, the perfectness with which it was made, or the neatness with which it was put up; it might be termed very good butter, and a fair sample of what the owners send weekly to market; there were a few boxes of excellent flavor, pure, hard, and clean in appearance, and packed with great nicety and care.

The 1st premium, is awarded to Michael Crosby, of Bedford, ... $15 00

2d do. to Nahum Hardy, Waltham, 10 00

3d do. to Luther Chamberlain, of Westborough, ... 7 00

4th do. to Adam Fay, . 5 00

The Committee would be very happy (if occasion were given) to congratulate the community on the improvements in the art of making Butter and Cheese : but in truth for the last few years, the Cheese has been rarely capable of sustaining a premium, and the butter of no remarkable or uncommon excellence; nothing better than what every farm in the commonwealth might and ought to produce, and where there is, as in many places there may be, a well constructed dairy room, purified by a running stream, stock selected for rich milk, sweet pastures, clean and thorough milkers, and makers, butter might be offered far surpassing in sweetness and richness any to which the premium is given. If the farm offer no particular advantage for a dairy, great attention in scalding and purifying every vessel and article used as well as great care, that the cream be not kept too long, and that no buttermilk remain, would add many thousands of dollars income to the venders, and increase the consumption by gratifying the taste and promoting the health of the purchaser. Much credit is due to Mr Bemis

of Watertown, for his exhibition of a jar of butter made in the summer of 1829, perfectly sweet and of good flavor.

The premiums on old Cheese are awarded :—

The 1st to Elisha Matthews, . . .	$10 00
The 2d to Job Ranger, ...	5 00

On new Cheese.

The 1st to Hooper Holland, ...	10 00
The 2d to Samuel Denny, ...	5 00

All the cheese offered was, with two exceptions, from New Braintree and Barre; and from those excellent grazing townships we are almost always indebted for the display of cheeses; some of them were certainly very good, but not of such uncommon excellence as to deserve higher commendation than receiving the premiums.

The sage cheese of Capt. David Lee, offered only for exhibition, was very excellent of its kind.

Respectfully submitted,

Benj. Guild,
J. C. Gray,
I. Thorndike, Jr. } *Committee.*
I. P. Davis,
Benj. Pollard.

It should be borne in mind, for the credit of those to whom premiums have been given, that as most of the butter entered for premium at Brighton, is afterwards sent to Boston market, and sold as Brighton butter, purchasers are apt to think Brighton and premium one and the same, though they are by no means convertible terms.

REPORT OF THE COMMITTEE ON MANUFACTURES.

The Committee on Manufactures report —

That none of the premiums offered have been claimed. The woollen and cotton fabrics, of prime necessity, being now well established and sufficiently encouraged by the market

prices, the Trustees considered it the best policy for the country to confine the premiums to such branches of the manufactures, as are about being commenced in the country or to such branches as are yet in an infant state.

The exhibition presented a variety of beautiful fabrics, principally articles of taste, wrought by females. The committee have selected such as they thought entitled to particular notice, for ingenuity or excellence, and recommend the allowance of gratuities to those who presented them, as follows:—

To Mary Fairbrother of East Sudbury, for the best specimen of brown linen thread . . . $2 00

To Mrs Samuel Denny, for two linen table cloths and two pairs of socks 5 00

To Jonas Munro for linen Diaper . . 2 00

To Aurelia White of New Braintree, for a straw bonnet 2 00

To John Hunter, for rose blankets . . 5 00

To Catherine E. Cook of Brighton, (aged 12 years) for a white lace veil 3 00

To Sophia M'Farlane of Lowell, (aged 12 years) for white lace veil 2 00

To Louisa W. Chamberlain of Cambridge for a black lace veil 2 00

To Adeline Marsh of Sutton, for woollen socks 1 00

To Deborah Walker of Barre, for palm leaf hats 2 00

To Eliakim Morse of Medfield, for diamond plat bonnets, a new article deserving particular encouragement, 5 00

To S. U. Lovett of Beverly, for a woollen hearth rug 3 00

To William Cobb, for a diamond plat bonnet and one of English straw 7 00

A specimen of broadcloth exhibited by Mr Shepherd of Watertown, made from common wool, was thought to be a very good quality of low priced cloth.

A great number of articles entered, after the time allowed to the committee for examination, they have unavoidably omitted to notice. These have, however, been entered for public in-

spection, with labels designating the persons who presented them, and have had the commendation to which they were respectively entitled from a numerous company of discerning visiters.

RICHARD SULLIVAN,
ROBERT WATERSTON,
JOSHUA CLAPP,
} *Committee.*

REPORT OF THE COMMITTEE ON BUTTER.

The Committee report for the gratification of those who contributed to raise the fund to be given for a premium to the best butter, that in collecting a number of competitors and many of them from distant states, one object, at least, seems answered. This offer also brings to the market a large quanti tyof butter, which, in being made for the premium, seems to assure the purchaser that the owners had exerted their highest skill, and had bestowed their best attention in the making and laying down what they considered worthy of so large a premium. The Committee award without hesitation, and with perfect unanimity, the first premium of *one hundred dollars* to Mr Henry Sprague, of Charlton, Worcester County, (Mass.) for six kegs of butter, with flat hoops; and they award with equal unanimity, though with more hesitation, the second premium of *fifty dollars* to Mr Moses Newell of West Newbury, (Mass.) Several other entries were so near in quality to Mr Newell's that it required more comparison and deliberation before deciding upon this premium, than was requisite in awarding the first. The butter of Mr Newell, though in only four tubs, was still decidedly different in each, particularly in the quantity of salt used. The inequality of several jars or kegs of many of the entries made the task of deciding difficult, — some butter, to which no premium was given, might probably have been selected better than Mr Newell's, but the adjoining keg of the same entry would neutralize its excellence as a lot. Mr Tuttle, of Westminster, Vt. had his butter laid down

in a mode new to the Committee; it was packed in neat soap stone boxes, which were of clean appearance, and apparently calculated to preserve a uniform temperature, though they may not be so entirely secure at the cover, as wooden boxes; whether they be a real improvement can be ascertained only by experience. There were, in the whole, thirtyfive entries for the premium, from Pennsylvania, New York, New Hampshire, Massachusetts, Vermont, and Maine. The butter, for the most part, was well made and clean in its appearance, and made with different objects, some of it being for present use, and some with a more particular view to its perfect preservation for a great length of time. One parcel, which was very sweet, though somewhat salt, was made by the owner 'for the use of the fishermen to take on their voyages next season.' It will probably retain its excellence, and though a premium for butter intended to be used one year from the time it is made, would be highly useful, and give excellent butter to the navy and shipping, the committee considered this premium, as intended for the best market butter for winter consumption, without any reference to the economical arrangement of his dairy, the food of the cows, or even the stock. Dr Warren, who had imported some butter from Montreal, (Lower Canada,) was kind enough to send it to the Hall for exhibition; and it was certainly very excellent, not superior, however, in the opinion of the Committee, to that to which the premiums are awarded.

One entry from Pennsylvania, and one from New York were made, but the state of the winds and weather unfortunately prevented the arrival of the butter, which the Committee the more regret, as those states are so justly celebrated for their success in this department of agriculture.

Respectfully submitted.

BENJ. GUILD,
J. C. GRAY,
I. THORNDIKE, JR, } *Committee.*
I. P. DAVIS,
BENJ. POLLARD.

We have subjoined an account of the different entries, numbered as entered, the quantity, and the prices they brought at auction. Some of the lots were disposed of at private sale.

	How packed.	*By whom entered.*	*Where made.*	*Quantity.*	*Price per lb.*	*When made, &c.*
No. 1,	7 tubs	Calvin Sanger,	Sherburne, Mass.	314	19 cts.	
2,	12 '	Calvin Howard,	Fitchburg, Mass.	327		
3,	6 ' & 5 jars	Luke Bemis,	Barre, Mass.	309	21 to 22	between June and October.
4,	7 '	Oliver Crosby,	Atkinson, Me.	470	13 to 14	' July and November.
5,	4 '	Moses Newell,	West Newbury, Mass.	303	30 to 32	since Sept. 25.
6,	16 '	Fitch Winchester,	Southborough, Mass.	726	19 to 20	no written account forwarded.
7,	5 ' & 1 box	Ichabod Everett,	Billerica, Mass.	333	18 to 24	
8,	11 '	Luther Chamberlain	Westborough, Mass.	424	25 to 30	
9,	3 '	Jonathan Wait,	Whately, Mass.	300	17	
10,	6 '	A. U.,	W. Vt.	390	17	no written account forwarded.
11,	6 '	J. W. Weeks.	Salisbury, Vt.	318	17 to 20	from August to October.
12,	6 '	Michael Crosby,	Bedford, Mass.	300		
13,	12 '	Abijah Nurse,	Rutland, Mass.	317	21 to 25	no written account forwarded.
14,	3 '	Nathan Cushing,	Woodstock, Vt.	348	16 to 17	no written account forwarded.
15,	7 '	Nathan Brigham,	Lempster, N. H.	317	22 to 25	
16,	11 jars	Oliver Clark,	Nerwich, Mass.	300		in 9 days from 46 cows.
17,	10 tubs	John Prince,	Winipiseogee Lake, N. H.	530	18	between 15 Aug. and 19 Nov.
18,	10 '	Hiram Ranney,	Westminster, Vt.	450	15 to 16	no written account forwarded.
19,	10 '	H. Herrick,	Reading, Vt.	550	18 to 20	
20,	6 '	R. Converse,	New Braintree, Mass.	390	18	
21,	6 '	D. Hunter,	New Braintree, Mass.	331	20 to 21	
22,	22 '	Cloud Harvey,	Barnet, Vt.	1300	22	
23,	12 '	Henry Sprague,	Charlton, Mass.	622	25 to ~~26~~	36
24,	7 '	William Eager,	Northborough, Mass.	325	25 to 26	
25,	4 '	A. J. K.,		354	16 to 19	
26,	6 '	William Oliver,	Barnet, Vt.	322		
27,	6 ' & 1 bll.	Wm Loveland,	Nerwich, Vt.	380	14 to 16	
28,	6 '	Otis Brigham,	Westborough, Mass.	300		
29,	1 '	Horatio Gates,	Montreal,	54		entered for exhibition only.
30,	6 '	B. & J. Lynde,	Guilford, Vt.	394	17 to 18	no written account forwarded.
31,	6 '	Wm T. Smith,	Saratoga, N. Y.	317	17 to 18	
32,	6 stone jars	Wm Tuttle,	Westminster, Vt.		17 to 18	
33,		Wm P. Endicott,	Danvers, Mass.			not received.
34,	6 '	Reuben Haines,	Philadelphia,	336		arrived too late for premium.
35,		Walter Bigelow,	Worcester, Mass.			not received.

We have subjoined a few notes taken from the written accounts which generally accompanied the several lots of Butter.

No. 5.— Mr Newell's butter, which took the second premium of *fifty dollars*, was made from the cream of 14 cows, since September 25th — there were about 80 lbs. more made of similar quality, which was not entered. The cows had common grass feed only. The butter was packed in old firkins, (which are considered better than new ones) in layers of about two or three inches deep, with a sprinkling of fine salt between each layer. The butter is thus more easily taken up as wanted for use.

No. 11. — Mr Weeks' butter was made from Aug. to October. Mr W. has the morning's milk skimmed in 12 hours, the evening's in 24 hours from the time it is taken from the cow; the cream is churned every other day; the butter salted with Liverpool, ground; laid down solid; nothing added, except a little brine: a waxed bag was fixed between the butter and the wood.

No. 12. — Mr Crosby's mode of making is by skimming the milk while perfectly sweet, churning soon, *not waiting for large churnings;* when the butter has come, he turns off the buttermilk, and then churns the butter again, in order to beat out the buttermilk well, without the warmth of the hand: in each of the two successive days, he works it over thoroughly, and then packs it down in tubs previously soaked with brine made clean by boiling and skimming. Mr Crosby has repeatedly taken the premium for the best butter exhibited at the Brighton and Concord Cattle Shows.

No. 17. — Mr Prince's butter was made at his farm on Merino Island in Winnipiseogee Lake, N. H. It was made between the 10th of August and 19th of November, from cows mostly of the Alderney breed. His pastures are newly cleared land: though his cows have been freely fed with pumpkins. His dairy room is neat and convenient, and attached alongside of an ice house. The butter as soon as packed is put into the

ice house. Less than the usual quantity of salt is used; no coloring; but a small quantity of saltpetre and loaf sugar is added.

No. 24. — Mr Eager's butter was made from 17 cows, since the 15th of September. The cream was gathered in seven weeks, from the milk, after sitting from 4 to 6 meals, which was varied according to the state of the weather, so that the cream might always be perfectly sweet. It was immediately churned after being skimmed; and from 5 to 6 lbs. pure fine salt put into 100 lbs. of butter, which was the only ingredient made use of.

No. 28. — Mr Brigham's butter was put down before the 25th of November, and intended for fishermen to take out to sea the next season. It was prepared with salt, saltpetre, and sugar, which has for a number of years enabled the butter to endure their trips without injury.

No. 29, which was of very fine quality, was entered by Dr. Warren of this city, for exhibition only, and was procured of H. Gates, Montreal. It was made by a Yankee farmer of the name of Hastings from Vermont, who now resides near Montreal, and has a dairy of 50 cows. — The 54 lbs. exhibited was the product of a single churning, in November.

No. 34. — Mr Haines' butter was made from the common breed of cows in Pennsylvania, with about one in ten of the prime full bred Alderney breed, so that the butter is 10 per cent Alderney, which Mr H. thinks makes a perceptible improvement. Their feed has been from a common pasture, with a large proportion of white clover. The pasture has been frequently top dressed, but not ploughed for more than twenty years.

Mr Sprague's butter, which took the *first* premium, was sold to Messrs Harrison Gray Otis, E. Codman, D. S. Ingraham, T. B. Coolidge, Mr Hancock, and Mr Barker, keeper of the Marlborough Hotel.

Mr Newell's lot which took the *second* premium, was sold to Messrs George Hallet, Ebenezer Rollins, and Ignatius Sargeant.

REPORT OF THE COMMITTEE ON GRAIN, VEGETABLE CROPS, &c.

The Committee appointed by the Trustees to examine the claims for premiums for Grain and Vegetable Crops, — for Experiments and Discoveries, — for Raising Trees and Hedges, — submit the following Report --

The past season has been a most bountiful one, and has been particularly favorable for the production of almost every article which claims the attention and rewards the labors of agriculturists in this part of the United States. It is not too much to say, perhaps, that there has not been a week in which the want of rain has been severely felt in this commonwealth, — while the sunshine and heat have proved sufficient for bringing to maturity the crops and fruits of our farms, and orchards and gardens. Of grass, wheat, rye, barley, Indian corn, — of potatoes and vegetables of almost every description, the crops have been truly abundant. For fruit of every kind, — excepting, perhaps, pears and grapes, for which latter the summer has been too cool and moist, — few seasons have been so good. Blessed with a year of so much plenty, it was natural to suppose that the claims of our farming brethren for the premiums offered by this Society, aided by the bounty of the Legislature, would be numerous and respectable. In this expectation the Trustees have not been disappointed. At the same time they may be permitted to say, that much more, they hope and trust, might have been exhibited had the inclinations of our farmers corresponded with their ability. The Trustees are aware, indeed, that some extraordinary exertion and skill are necessary, in aid of a good year, to meet the requirements of the Society; but our enterprising husbandmen, and all

other classes of citizens, would do well to have in mind, always, that nothing of great worth is to be had without industry, and care, and skill. Labor is the price demanded of us, by a wise Providence, for everything truly valuable. It will be well, too, to have constantly before us the force of example. The natural effect of a successful effort, in any pursuit, is to stimulate others in the same course, and thus to promote the general good. Care and system, like everything else, become easy by practice.

It is a remarkable fact, that among the applications before this committee, there is not any instance in which two applications have been made for the same article. They are not embarrassed, therefore, as some of the committees have been, in comparing the merits of numerous *competitors*. They regret that *one claim*, at least, should not have been made for each article proposed by the Trustees.

The committee recommend, — instead of abstracts by the committee of the modes of culture, as has been usual, — that the statements of the claimants, in their own words, should follow each case. They are led to propose this, not only because they are generally very well expressed, but because they will be more intelligible to practical cultivators, probably, than any views the committee can give.

WHEAT.

1. The Committee consider Messrs Tristram Little, and Henry Little, of Newbury, in Essex County, as entitled to the premium of $20 for a crop of spring wheat, being 34½ bushels on an acre. These gentlemen have been benefited almost every year by the premiums of this Society, and seem richly to deserve all they have received, as judicious cultivators.

NEWBURY, Nov. 2, 1830.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN — We sowed the present season a piece of spring wheat, containing, by admeasurement, one acre and one

rod. The soil is a rich dark loam, the past year it was cultivated with onions, and manured with yard (or cellar) manure, about eight cords to the acre, which produced between four and five hundred bushels. The 22d or 23d of last April it was sowed with wheat without any dressing, one bushel and a half was sown, (the wheat was of the white kind) the soil was once ploughed and the grain harrowed in. It was reaped in August, which cost four days' labor; the quantity of straw was as large as the bulk of five tons of hay. It was threshed and winnowed in October, which cost ten days' labor, and there were thirty-four bushels and one peck of grain.

Respectfully yours,

TRISTRAM LITTLE,
HENRY LITTLE.

This may certify, that I surveyed for Tristram and Henry Little a piece of ground cultivated with wheat, which contained one acre and one rod. PIKE NOYES.

This may certify, that I assisted the subscribers in threshing and measuring their crop of wheat, and there were thirtyfour bushels and one peck. DANIEL S. HEATH.

Essex ss. November 2d, 1830. — Then the aforenamed Tristram Little, Henry Little, Pike Noyes and Daniel S. Heath, made oath that the statement and certificates by them subscribed were true. Before me.

DANIEL ADAMS 3d, *Justice of Peace.*

BARLEY.

2. To Capt. Benjamin B. Howard, of West Bridgewater, Plymouth County, is awarded the premium of $20 for his crop of barley, being about 48 bushels the acre.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN — The following production of one acre one half and eighteen rods of land, cultivated with barley, the

past season, by the subscriber, on his farm in West Bridgewater, is offered for the Society's premium. The soil is a dark, rich loam, pretty free from stones, and somewhat inclining to moisture. A part of it, in 1829, was cultivated with Indian corn, having been manured at the rate of about eight common cart loads to the acre; the rest was cultivated two seasons successively previous to the past, with potatoes; receiving each year, at the rate of about 15 loads of manure. The crop of corn was estimated at 45 bushels to the acre; that of potatoes, in 1829, at something near 400 bushels. In April last, it was twice ploughed with a light plough, and about 35 cart loads of coarse manure from the barn windows, were drawn on, spread, and harrowed in. About the first of May it was sown with barley at the rate of about three bushels to the acre, and with grass seed, which also were ploughed and harrowed in. The crop was mown and got in, in July, and was threshed out in September with two horses, *in less than two days*. It was cleaned with a machine, and measured 78 bushels and one peck of clean handsome barley.

BENJ. B. HOWARD.

This may certify, that I have measured the aforementioned piece of land cultivated with barley, and it contained one acre one half and eighteen rods, and no more.

S. O. COPELAND, *Surveyor.*

This may certify, that I assisted Capt. Benjamin B. Howard in cultivating the aforementioned piece of land, and the foregoing statement relative to the same is true according to the best of my knowledge and belief. ASA RANDALL.

We, the subscribers, hereby certify, that we have measured the aforementioned crop of barley, and that the foregoing statement relative to the measure thereof is true.

BENJ. B. HOWARD.
ASA RANDALL.

Plymouth, ss. October, 1830. — Then personally appeared the abovenamed Benjamin B. Howard, Stephen O. Copeland, and Asa Randall and made oath to the truth of the foregoing statement and certificates by them respectively subscribed.

Before me,

AUSTIN PACKARD, *Justice of the Peace.*

RYE.

3. To Mr Richard Adams, jr, of Newbury, $20 for the premium on winter rye — being $38\frac{3}{4}$ bushels on an acre.

NEWBURY, Nov. 1, 1830.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN — Agreeably to the directions of the Trustees of the Masachusetts Agricultural Society, requiring each claimant to state the quality of the land, its previous product, &c, I submit the following, in support of my claims for the Society's premium for raising the greatest quantity of rye on an acre the present year. The soil is a yellow loam; the season of 1829 it was cultivated with white beans without any manure, which produced about 25 bushels. The September following, (after the crop was harvested) the ground was ploughed and five pecks of rye was sowed and harrowed in. The April following, there was spread on the same about ninety bushels of leached ashes. It was reaped and threshed in July, and the produce was 38 bushels and three pecks. The straw I sold which weighed more than two tons. The labor done on the above crop was, as you will see, nothing extra except the dressing with ashes.

Yours respectfully,

RICHARD ADAMS, JR.

These may certify that I surveyed the above piece of land which contained one acre, and no more.

TRISTRAM LITTLE, *Surveyor.*

This may certify that I assisted in reaping and threshing the within crop of grain for Mr Adams, and there was 38 bushels and 3 pecks.

Daniel S. Heath.
Henry Little.

Essex, ss. November 2d, 1830. Then the aforenamed Richard Adams, jr, Tristram Little, Daniel S. Heath, and Henry Little, made oath that the statement and certificates by them subscribed were true. Before me,

Daniel Adams 3d. *Justice of the Peace.*

POTATOES.

4. To Mr Payson Williams, of Fitchburg, an old customer from the County of Worcester, $20 for his crop of potatoes — about 570 bushels to an acre.

[To the Committee on Agricultural Products.]

Gentlemen — As a claimant for the premium offered by the Trustees of the Massachusetts Agricultural Society for the largest crop of Potatoes grown on the acre the present season, I will state, that the ground on which my crop was grown, inclines to the morning sun, is of a deep reddish loam, somewhat rocky. In 1829, an abundant crop of winter rye was taken from it, preceded by turnips for the successful culture of which, the sheep (100) were nightly folded, for two previous years, after the hay crop was taken off. The rye stubble was turned under immediately after reaping that crop. The process for preparing the ground for the Potato crop was as follows, viz. In May 1830, fifty cart-loads, 33 bushels each, of unfermented sheep and other manure, was evenly spread on and immediately ploughed in 10 inches deep, furrows struck three feet each way at right angles. Twentyfive bushels of the River of Plate Reds and Philadelphia Blues, were used for seed; the reds planted whole, one in a hill; the blues split in two pieces, which also seeded a hill; the planting finished the last of May. The plants had two good hoeings; the last when in the bud, the

plants or stalks being ten inches in height. The harvesting finished the last of October. The amount of the Potato crop was by careful measurement, six hundred and eighteen bushels on one acre and fourteen and a half one hundred and sixtieths parts of an acre. Also had on a part of the field about 1000 lbs. crook-necked and West India squashes, planted in every other hill and every other row, where the potato seed was wholly left out. The land is probably good enough to produce a much larger crop when the season is congenial to the culture of the Potato. The past season has been *too wet and cold*, even for this hardy vegetable.

Yours, &c.

P. Williams.

I, Philip F. Cowdin, sworn surveyor of the town of Fitchburg, hereby certify that I have this day measured for Payson Williams a certain plot of ground on which Potatoes were grown the present season, and find the same to contain one acre and fourteen and a half one hundred and sixtieths and no more.

P. F. Cowdin.

Fitchburg, Nov. 2d, 1830.

I, Benjamin Tilden, of the town of Fitchburg, hereby certify that I assisted Payson Williams to harvest the crop of Potatoes grown the present season on the plot of ground as stated in the above certificate of Philip F. Cowdin, and found the same, by accurate measurement to be six hundred and eighteen bushels.

Benjamin Tilden.

Worcester, ss. Nov. 6, 1830. — Then the above named Benjamin Tilden appeared and made oath to the truth of the above certificate by him subscribed.

Before me,

David Brigham,

Justice of the Peace.

Expense of Cultivation.

50 loads manure, the proportion drawn by the Potato crop probably not more than 50 per cent, at $1 per load	$25 00
Carting the same and spreading	5 00
Ploughing in the manure	4 00
Labor in planting	5 00
25 bushels of seed at 2 shillings	8 33
Two hoeings	9 00
Harvesting the crop, say 20 days' work, at 4 shillings.	13 50
	$69 83

In reading Mr Williams' account of his fine crop of potatoes, our farmers are requested to notice that the manure was spread over the ground instead of being put in the hill in the common way. If using manure at broad cast will give as good a crop of potatoes or corn as putting it in the hill, will it not be a great saving of labor, and at the same time place the manure more equally on the ground? No process in farming seems more slow and tedious than dunging out in the hill. It is hoped that this statement of Mr Williams, who has always appeared before this society as a very intelligent and successful farmer, will bring out some remarks from practical men on this subject. It will be seen that Mr Ware, of Salem, planted this year, in the same way, both corn and potatoes. Among our New England crops, none are so general, or more important, than corn and potatoes, and if a more economical mode of raising them, as regards labor, can be found out, it will be a great public benefit. Mr Williams used a great quantity of manure, it is true, — perhaps twice or three times as much as is usual among farmers, — and his land was in good condition before; but then he intimates, and seemingly with reason, that, owing to its being spread and ploughed in, not more than half its strength was drawn out by the potato crop. All experi-

ments of this kind deserve regard, and one great object of the Society is to elicit the opinions of observing farmers for the public good. Perhaps some one will attempt to show the difference in labor, as to planting corn and potatoes, by dunging in the hill or otherwise. It is a question which needs to be settled.

MANGEL WURTZEL.

5. The committee take pleasure in recommending the premium of $20 to be paid to Mr Gideon Foster, of Charlestown, Middlesex County, for his admirable crop of mangel wurtzel. If so large a quantity of this valuable vegetable has been raised by any one in this country, on an acre, it has escaped the notice of the committee. The largest amount that has been presented on any former occasion, was, it is believed, by Messrs T. and H. Little, of Newbury, which fell a little short of 1000 bushels. It will be seen by Mr Foster's well prepared statement, that, *measuring* by cart loads, he had 1413 bushels, — that *weighing* by the cart load, and taking the standard weight of 56 lbs. the bushel, he had 1542 bushels, or 86,455 pounds, upwards of 42 net tons. For this premium there has been no other claimant, but the committee hope and believe, that it is not hence to be inferred that our farmers do not generally raise more or less of the mangel wurtzel. On the contrary, they are led to think, that if, as regards most of those vegetables for cattle, a half acre had been proposed instead of a whole one, there would have been numerous competitors. It may be thought advisable, another year, not to insist on an acre, and to have several premiums for the same article. Considering the length of our winters in this northern climate, — that our stock must be fed from the barn from the middle of November to the middle of May, six months, — how important and desirable is it that we should feed our cattle on something besides dry fodder — some food which is, at the same time, succulent and nutritious. No climate is better adapted than ours for mangel wurtzel, sugar beets, (the most nutritious of the two, and about equally productive,) ruta baga, common turnips, carrots, parsnips, potatoes, — and of all these,

cattle are very fond, and most, if not all of them, form the most wholesome and favorite food of sheep and swine. Consider the *value* of those crops, too, by the acre, compared with hay, and that any season good for hay will be good for them. Perhaps it may be truly said, that there is as little uncertainty of a good crop of corn and potatoes as of hay. From the claims exhibited in this report, it will be found, that of mangel wurtzel there has been produced 42 tons to the acre, of ruta baga 25 tons, of potatoes nearly 18 tons. Of sugar beets, carrots and turnips, it is presumed the same quantities can be raised as of potatoes or ruta baga : of parsnips not so much, but this last vegetable is the sweetest of all. These are prodigious crops, such as may not, in common seasons, be generally or often realized ; but supposing one half, or one third as much can be produced, what stronger inducement can be offered to every farmer to turn his attention to these things ? On our farms, we rarely have more than a ton and a half or two tons of hay on an acre, and though it is not pretended that more labor is not wanted to raise vegetables than hay, and more manure and particular care, yet, as a preparation of the ground for hay, and as forming a most grateful variety in the food of animals, and considering the prodigious difference in weight of crop, who can possibly doubt its being better to put a small portion of our grounds into this kind of culture ? We have generally, it is believed, had the idea that much more labor and skill are necessary in cultivating mangel wurtzel, sugar beets, and ruta baga, than for corn and potatoes. This notion is natural enough, because we have attended to the latter much more than the former. But we have, in this report, as wehad in the report of the last year, the testimony of a practical and nice observer, Mr Colman, who, in speaking this year of ruta baga, says — 'The whole, from the sowing to the gathering, was not two thirds of the labor usually bestowed on planting, cultivating and gathering an acre of potatoes.' E. H. Derby, Esq. a man of experience in these things, says, in 1825, that 'cabbages, tur-

nips, mangel wurtzel, sugar beets, are all raised at as little expense as potatoes.' If all this be true of potatoes, it certainly may, with truth, be said of Indian corn. We have the opinion of Mr Colman, which is worthy of notice, as to the *value* of ruta baga for fatting or for store cattle.

CHARLESTOWN, Nov. 30, 1830.

The following is an account of the culture and product of one acre of Mangel Wurtzel raised by Gideon Foster, of Charlestown, in the County of Middlesex, Massachusetts.

The soil is a black loam with a clay bottom, inclining six degrees to the northeast. In 1829, three fourths of the same was planted with potatoes, with a moderate supply of manure in the hills, and yielded an ordinary crop; the residue was in mangel wurtzel and grass. Early in the month of May of the present year, there was spread on said land about eight cords of compost manure, and ploughed to the depth of eight inches, and harrowed in the usual way. About the 12th of May, I sowed the seed in rows by hand, twentytwo inches apart. I thinned them from 8 to 12 inches apart, in the rows when they became the size of a goose quill. I should have preferred an earlier period for this part of the cultivation had it not been for the threatened destruction by the wire worms, which were then numerous. Nothing more was necessary in point of cultivation to perfect the crop, but to keep the soil loose about the roots, and the land clear of weeds, which was principally done with shuffling hoes, except frequent cropping of the under leaves, by which I obtained treble benefit. 1st, by obtaining an excellent food for swine and horned cattle; 2d, by admitting the sun and air to the roots; 3d, by removing them near to the crown, about the middle of September, which gave them time to heal, so that on harvesting they are found to be in a sound and healthy state for preserving them through the winter.

They were harvested in the 3d week of October. The roots were measured in a wagon body that held twentythree bushels by accurate measurement. This measure was filled

61 times, and there were 10 bushels over. The wagon body was then placed on its wheels and twice filled (to the judgment of those of us present) as formerly, and weighed at the patent scales of D. Devens, Esq. of this town. The average weight of which was as per tickets annexed, 1415½ lbs. making 1433 bushels or 86,961 lbs. or 43 tons, 961 lbs.

It was observed by agriculturists who inspected the field, that much of its beauty consisted in the uniformity of the size of the roots, none of them being so large as have been raised by others, while very few of them were small. The largest that I have known to have been measured, being 25½ inches in circumference.

The actual expense of raising said crop, I estimate to be 35 dollars. GIDEON FOSTER.

Middlesex, ss. Nov. 30th, 1830. — Then personally appeared the aforesaid Gideon Foster, and made oath to the truth of the foregoing statement before me,

E. PHINNEY,
Justice of the Peace.

I hereby certify that the aforegoing statement of Gideon Foster, relative to the quality aad weight of Mangel Wurtzel raised by him the present season, I having assisted in gathering and weighing the same, is correct and true.

his
Witness, E. PHINNEY. WILLIAM × COOPER
mark.

CHARLESTOWN, Nov. 30, 1830.

Middlesex ss. 30th *Nov.* 1830. — Then the aforesaid Wm. Cooper, made oath to the truth of the foregoing certificate, before me,

E. PHINNEY,
Justice of the Peace.

RUTA BAGA.

6. Rev. Henry Colman, whose farm is in Lynn, Essex County, is entitled to the premium of $20 for his fine crop of ruta baga — 741 bushels on an acre, weighing 68¾ lbs. a bushel, being about 25 tons and a half.

SALEM, DEC. 1st, 1830.

[To the Committee o the Massachusetts Agricultural Society on Agricultural Experiments.]

GENTLEMEN — Accompanying this you have the certificates of a crop of Ruta Baga raised this year on my farm in Lynn. From these it will appear that on an acre, measured by a sworn surveyor, on one side of the field, there were gathered 741 baskets full ; and that forty baskets of the abovenamed, weighed at the town scales 2750 lbs. net weight. This, allowing 56 lbs. to a bushel, the standard weight assumed by the Society, would give a crop of 903 bushels to the acre.

The turnips were planted on the 29th of June and 2d of July ; about one pound and a half of seed was used for the acre ; and they were gathered and stored in cellars and in the barn in the last part of November.

The ground on which they grew is a good soil, neither wet nor dry, and bore the last year an abundant crop of onions, and corn the year preceding the last. It was well manured at both times and in fine tilth. It was manured with at least six cords to the acre of barn manure the last spring and sowed again to onions ; but the seed, entirely failing, it was ploughed, harrowed, furrows struck out, and about eight cords of barn manure spread in the furrows ; ploughed again so as by a back furrow to form a ridge, over the manure, and the seed sown with a small drill harrow on the ridges, making the rows about twenty inches asunder. As soon as the plants were of sufficient size, a drill harrow, with small shares fixed to it, to cut off all the weeds was passed through the rows ; and the plants thinned with a small weeding hoe to the distance of about eight inches apart, and the vacant places filled up by transplanting from the super-

numerary plants. They were once more harrowed and cleaned, which was a very small labor; and owing to the very unpropitious weather, were not harvested until very late. Some of them were very large; one weighed 15 lbs. and many were nearly as large. The exact expense of cultivating the acre cannot be estimated, as it was intermixed with other farm work; but the whole from the sowing to the gathering, was not two thirds of the labor usually bestowed on planting, cultivating, and gathering an acre of potatoes.

My Swedish Turnips the last year, of which I raised considerable quantities, were fed off to my oxen, dry cows, young stock, and fatting sheep. To the cattle they were of very great advantage; and for feeding sheep, they proved the last year, by an accurate account, worth from ten to twelve and half cents per bushel. The man who has the care of my stock considers them as among the most profitable feed, which can be given either to fatting or to store cattle. Three years' experiment has increased their value very much for these purposes in my own estimation.

I am, gentlemen, very respectfully yours,

HENRY COLMAN.

This certifies that I have superintended and assisted in the gathering and measuring of a crop of Ruta Baga or Swedish Turnips, grown this season on an acre of ground, which had been measured and stacked off on the farm of Mr Henry Colman in Lynn; and that we obtained from the said acre 741 baskets full after they had been topped and cleaned, and that 40 baskets of the above named turnips at the town scales in Salem, weighed 2750 lbs. net weight, as by the annexed certificate of the town weigher. JOHN MARSH.

This certifies that a load of Turnips driven by John Marsh weighs 4520 lbs. gross, 1770 lbs. tare, 2750 net lbs.

A. BROWN, *Town Weigher.*

SALEM, DEC. 1, 1830.

Essex ss. Dec. 1, 1830. — Then John Marsh made solemn oath to the truth of the above certificate by him subscribed.

Before me,

DUDLEY L. PICKMAN, *Justice of the Peace.*

SALEM, DEC. 1, 1830.

The committee are sorry that, after so fine a year, no one should have preferred a claim for the premium on carrots, or sugar beets, or parsnips, or even turnips. A better season for raising them rarely if ever occurs. As to English turnips, the culture of them is so common and easy, and they have proved so fine this year, it is really surprising that no claim should have been presented. Can it be because they have not been raised by many in sufficient quantity to gain the premium, or is it not rather that our worthy farmers have neglected to make application? Whatever may be urged as to their not being in the habit of attending to mangel wurtzel, &c, it cannot be said of turnips, which have been cultivated always to a greater or less extent, by almost every farmer.

ONIONS.

7. The committee award the premium of $20 to Mr Jos. Perkins, of Newbury, for his crop of onions. The product by estimate was 657 bushels on an acre. Mr Perkins has supposed 52½ lbs. to the bushel. No standard weight is given by the society, but the committee believe 50 lbs. to be about the average weight of a bushel.

NEWBURY, Nov. 12th, 1830.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN — In conformity to the rules and regulations of your society, I send you a statement of the amount, together with the manner of culture &c., of one acre of onions, the growth of 1830. The quality of the soil is a yellow loam, and has been cultivated with onions several years. In 1829, it was sown as usual with onions, without any dressing, and produced between 400 and 500 bushels. The 2d of December last,

after the crop was off, there were three and a half cords of barn manure ploughed in, in ridges. — The 21st and 22d of April following, the land was ploughed and harrowed, and two and a half pounds of seed was sown in drills about fourteen inches apart. The first hoeing and weeding was done June 11th, which cost five days' labor. The 2d was July 2d, four days' more; the last weeding was done the 22d, which cost four do. They were harvested early in October, and between 9,000 and 10,000 bunches have been bunched, which, estimating 15 bunches to the bushel, (each bunch weighing 3½ lbs. is a fair calculation,) together with those that have been topped and sold by the bushel, there were 657 bushels.

JOSEPH PERKINS.

These may certify that I assisted in cultivating, and harvesting, and measuring the above crop of onions, which said statement is correct. JOSHUA PERKINS, JR.

This may certify that at the request of Joseph Perkins, I measured one acre of land and marked it off, (which ground was, to appearance, covered with onions.)

TRISTRAM LITTLE, *Surveyor.*

Essex ss. Nov. 13th, 1830. — Personally appeared Joseph Perkins, and Joseph Perkins, Jr, and made oaths to the aforegoing statements, by them severally subscribed, before me.

SILAS MOODY, *Justice of the Peace.*

No claims have been sent in for the best crop of Indian corn, — for the greatest quantity of vegetables raised for consumption on the farm of the claimant, — for the greatest quantity on one acre of millet, of common beets, cabbages, dry peas, dry beans, mustard seed, flax and hemp.

TURNING IN GREEN CROPS FOR MANURE.

8. To Mr William Buckminster, of Framingham, Middlesex County, the committee award the premium of $20 for his ex-

periment 'of turning in green crops as a manure.' This attempt of Mr Buckminster, in the judgment of the committee, well deserves the attention of farmers, and particularly of those who live too far from a city or town to buy manure. The practice of enriching or renovating land by ploughing in green crops, is a very common one in Europe, though hardly known here. But would it not be well to try it? Our farmers in general have more land than they can till, owing to their not having manure enough, or because it is too far from their barn yards; and hence it is that some large farms, and naturally of good soil, actually produce less, but with infinitely more labor, than much smaller ones that are well cultivated. Indeed the desire of having large farms, without giving to them the necessary outlay, is the common error of our country. The inevitable result is scanty crops and more labor. An acre is mown, often, for a ton of hay or less, where with decent care two tons might be had. A pasture often of a dozen acres, which might be easily ploughed, does not afford food enough for one cow; whereas at small expense, it might be made to support four or five. Now, in a country like ours, where produce is so cheap and labor so dear, this is unquestionably a wrong, not to say a ruinous, mode of management, — a mode which drives our children to the Western or Eastern country for want of land, who might have enough here if rightly used. But if farmers *will* have more land than they can till in the ordinary way, for want of manure, what better plan can be devised than that of ploughing, and sowing, and turning in the green crops, with the sole view of fertilizing their lands? Whether it be afterwards used for mowing, or tillage or grazing, still it must be good husbandry, if we can rely on the testimony of Mr Buckminster, and on the experience of farmers in England.

The remarks of Mr Buckminster on bog or meadow mud, are worthy of notice. It is quite certain, as he says, that used in its crude state, as dug from the meadow, it is inert and seemingly useless; but when put in the barn-yard and hog-pen,

and trampled upon and mixed with manure, it becomes an excellent compost. As almost every farm has bog meadow, it must be well known, that after being several months in the barnyard or pigsty, it makes an excellent manure for corn in the proportion of about two thirds mud and one third dung. Whether Mr Buckminster's notion of carting it at once to the ground where wanted, to save labor, and there mixing it with manure, is a correct one, every man will judge for himself. The common idea has been, that to take it to the barnyard *first* is better. But all must agree that it may be very profitably used as food for plants, and therefore ought not to be overlooked in the management of the farm.

On ploughing in Green Crops as a Manure.

FRAMINGHAM, Nov. 10, 1830.

[To the Trustees of the Massachusetts Agricultural Society.]

I have been induced, partly by the premium you offer, and partly for my own satisfaction, to make some experiments as to the value of green crops ploughed in for manure, and I send you the result.

In the middle of May, 1828, I ploughed up three and a half acres of pasture land that had, for many years, been tilled by the former owner until the crops would not repay the labor. It was a light-loam, but not sandy. It had been so reduced, that 10 acres did not afford sufficient pasturage for one cow through the season. We sowed immediately after thus ploughing, a bushel of buckwheat to the acre, and in 6 weeks rolled down the buckwheat in the direction we intended to plough, and then ploughed and sowed as before. In the latter part of August, we turned in a second crop of buckwheat — having rolled it down flat as at first, and then seeded it down with clover, herds grass and red-top, one peck and a half to the acre. Most of the clover was winter-killed, and a great part of the herds grass and red-top. Early in the spring of 1829, we sowed 10 lbs. of clover seed to the acre; and with a light harrow, went slowly over the whole. The seed took well, but the clover was not

high enough for the scythe when the other grass was fit to cut. We mowed what had not been winter-killed; and where it yielded best, we obtained one ton of herds grass to the acre. Immediately after mowing we turned in our cattle, and fed the grass close. Last spring, (1830) the grass was so forward we turned in our cattle on the 19th of April. There were 8 acres in the whole field, but there were only five acres that bore any grass worth 50 cents. These five acres were the three and a half managed as I have stated above, and one and a half on which grass seed was sown in April, 1830; and fifty bushels of leached ashes mixed with loam, spread on the surface. On these 5 acres, (and the 3 which bore nothing,) I pastured 4 cows constantly for 4 months, wanting two days, and they had an abundance of feed. I never had any pasture ground yield so well before. I think these green crops improved the land as much as a good dressing of manure, and the comparative expense I estimate as follows on one acre, viz.

With Manure.

20 ox cart loads of manure	$24 00
Hauling ¾ mile and spreading	5 00
Ploughing once, green sward	2 00
Harrowing and sowing	1 00
	$32 00

With Green Crops.

First ploughing, green sward	$2 00
2d ploughing, and rolling with man and horse .	1 00
3d ploughing, and rolling do, do, . .	1 00
Three harrowings do, do, . .	1 00
Two bushels buckwheat	1 55
Sowing do, ...	25
	$6 80

Thus you will see, that it has cost me less than one fourth as much to enrich my land with green crops, as it would with ma-

nure. If my grass had not been winter-killed the first year, I intended to have shown you the precise weight of hay cut on an acre. The above estimate of the cost of manure is less by 12 cents per load than it can be purchased for in this place. I have given more within 2 years.

Farmers ought, in duty, to make the trial for themselves. They generally have much land, (miscalled under improvement) 10 acres of which, will not pasture a cow. Such land usually lies distant from the house. They say they cannot make manure enough for the whole farm, and they find it more profitable to lay their manure on lands nearer home. They do not seem to conceive it possible to enrich them otherwise than with stable manure. If they would plough and sow properly, they could make the whole rich.

They further object to growing crops to be ploughed in; for, say they, 'The growing crop will exhaust the land as much as it will enrich the same when ploughed in, so that we end where be began.' This would be correct reasoning, undoubtedly, if the growing crop obtained its whole sustenance from the ground.—It probably does not one sixth part. It was the knowledge of this principle that gave me confidence of success in the experiment. The advantages of green crops for manure are greater where the lands are distant from the barn, than in other cases.

Bog Mud as Manure.

I have made another experiment on compost manure. In April, 1828, I carted 30 loads of mud or muck from a pond-hole, which had a black soil 4 feet deep. — I thought it must be valuable manure, though nothing but rushes and skunk cabbage, had grown on it for 20 years, owing to its sunken position. These 30 loads were immediately spread on an acre of worn-out land, and ploughed in. White Beans were planted on a part, buckwheat on a part, and barley on another part. — No crop worth cutting was produced. The muck did no service, either last year or the year before. Last autumn I tried

it again; carted out 15 loads on to the high land aforesaid, and mixed with those fifteen, two loads of stable manure; the whole was mixed together, and suffered to lie in a heap till the 10th of last May. It was then carted on to the same land as the other, and the whole heap produced all the good effects of clear stable manure. — I raised a good crop of Indian corn from it, without putting on over 20 loads of the compost to the acre. Such was the difference between applying this muck raw or green, and applying it after it had been six months fermenting in a mass, thawing, freezing, &c, to become pulverized.

All our farmers in this quarter, in making compost manures, carry the most bulky, heavy ingredients many rods — some half a mile to their cow-yards and hog-pens — and when these materials have rested there long enough, they are then carried back again to the fields. I would save them most of this labor. Let them make their compost heaps on, or near the soil where it is to be applied, and as near as possible to where the chief ingredient lies. This will save a double carting of half or three quarters of a mile. They will have to carry nothing but a little stable manure to that distance in most cases, instead of carting back and forwards the whole mass.

Respectfully yours,

William Buckminster.

I, William J. Buckminster, certify that I labored on my father's farm, William Buckminster, in 1828 and 1829. That in the former year he ploughed up between 3 and 4 acres of land that produced very little of anything. That we sowed in 1828, two successive crops of buckwheat on the same, and ploughed it in, and that we seeded the land down about the first of September with herds grass, clover, and red-top. The clover was nearly all winter-killed. We sowed more early in spring, and harrowed it in among the standing herds grass. The herds grass obtained a good height, but was quite thin. The clover came up well, and afforded fine pasturing after

haying. Last spring, we turned in four cows on this land and pastured them there four months, wanting two days, taking them out on the 20th of August — the cows pastured on this lot thus laid down, and about one acre and a half more in the same enclosure, making not more than five acres for the four cows. There were from two to three acres more of meadow land, which the cows hardly meddled with, and which produced but a trifle of feed, but the cows ranged over it. The cows had a great abundance of feed, and in many places the grass was so rank the cattle suffered it to grow up and go to seed, one yard square in a place. When we sowed the buckwheat we had much more grass for pasturing than we have ever had after manuring, and then planting and laying down to grass. WILLIAM J. BUCKMINSTER.

FRAMINGHAM, Nov. 30*th*, 1830.

Middlesex, ss. Dec. 1, 1830. Then the above named William J. Buckminster, personally appeared and made oath to the truth of the above certificate, by him signed, before me.

WILLIAM BUCKMINSTER, *Justice of the Peace.*

YELLOW LOCUST.

9. The committee are glad to be able to bring before the public another experiment of Mr Buckminster's, for which he or Mr Clark, of Northampton, may become entitled to a premium of $50 the next year: — it is for an acre of the yellow locust, having not less than 1000 trees. The yellow locust, *(Rabinia pseudo acacia,)* is the common locust of our country, and well known to everybody. It has much to recommend it. The ravages of the locust borer has, for forty years, perhaps, discouraged its cultivation in this part of the country. Before that period it was thought, by discerning men, a most valuable tree, and is still thought so in Europe, where, as the late learned Professor Peck has said, 'this insect does not exist.' It was cultivated in old times for various reasons. Planted on gravelly and sterile lands, where it grows freely, it was

found greatly to fertilize the ground. It was considered valuable for its great durability when used for posts and as timber. It was used for tree-nails in ship-building, not only for its strength and durability, but from its not shrinking like other wood. It was esteemed for its quickness of growth, its beauty as an ornamental tree, and its aptitude to perpetuate itself by its roots, which run near the surface of the ground, — and if wanted for no other purpose, could be used as a most pleasant article of fuel, as much so as walnut. At the present time, nothing but the worm prevents our holding the locust in the same estimation our ancesters did, and shall this discourage us so much as not only to prevent our planting, but incline us to extirpate the few trees that remain? Rather let us encourage the *tree* and endeavor to *extirpate the worm.* This would be a much wiser as well as a more manly course. There are parts of the country, the more southern parts, it is said, where this insect does not abound or is not known, and why may we not hope, ere long, to be freed from it? At worst, the locust will do for fire-wood, though liable at present to be blown down before it attains much size, — and for this purpose alone, considering that our forests are disappearing, — it is well worthy of public attention. Bad as the case is, it may be much doubted, whether, as it can be so easily done, so good a use can be made of our gravel knolls and barren spots as to plant them with the yellow locust.

FRAMINGHAM, Nov. 15th, 1830.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN — I have been induced by the premium offered by you, to plant out an acre of Yellow Locust trees. In the spring of 1828, I procured at the seed-store of Mr Russell, in Boston, a quantity of seed, and poured into it *boiling* water, and suffered it to soak therein three or four days. Then I sowed it in the garden, and carefully weeded the plants; many of them grew to the height of four and a half feet that season. In the spring following, I transplanted them on to about two

thirds of an acre of poor, worn-out land, placing them in rows 8 feet apart, and at 4 feet distance in the rows. On one side of this plat in 1829, I sowed more seed, with the view of making a hedge fence with them, and of supplying more trees to make out the acre. I have this season covered over an acre with the trees of the two seasons, and there are more than 1000 trees on the acre. On two thirds of the acre, therefore, the trees are now of three years' growth — on the other third, of two years' growth. On the best of the land some of the trees are four and a half inches in circumference, and seven feet high. I chose a poor soil for the trees that they might enrich it.

I notice that wherever Yellow Locust trees grow, the grass under them is not only much increased in quantity, but that the cattle eat it in preference to other grass — always biting it close to the ground. I therefore prefer it for hedges to any other live growth — for, so far from injuring our pastures, they are a positive benefit to them. Respectfully yours,

William Buckminster.

DESTROYING BEE MOTH.

10. Mr John Stone, of Sudbury, in Middlesex, has made known his method of securing his bee-hives from the bee-moth. The committee recommend the publication of this statement, considering every hint on this subject as worthy of notice; but as the same in substance has been recommended by others, they do not think it merits the premium.

I, John Stone, of Sudbury, in the county of Middlesex, and Commonwealth of Massachusetts, do testify and say, that I have kept bees, for the term of ten years last past; that for several years my bees were very much injured by the bee-moth, so called; I lost two hives of bees, which were wholly destroyed by them; every bee was killed and all the honey and comb consumed, and the hive filled with web. In the spring of 1824 or 1825, about the first of April, I raised my hives about $\frac{5}{8}$ of an inch, by putting a small block of that thickness under each corner of the hive; immediately the bees

commenced the work of destruction upon the moth-worm, and entirely cleared the hives of them. I have followed the practice ever since, and have never received any injury from the bee-moth, the worm having been invariably destroyed by the bees, and brought out of the hives. The hives have remained in this situation till the month of October, when I have taken away the blocks and let them down. JOHN STONE.

Middlesex ss. Sept. 27, 1830. Personally appeared John Stone, and made oath to the truth of the above affidavit, by him subscribed. Before me,

ISAAC FISKE, *Justice of the Peace.*

EXTIRPATING BORER.

11. Mr David Prouty, of Hanover, Plymouth County, has sent a letter to the Trustees, dated Oct. 19, 1830, on the subject of the Apple Borer, which the committee advise to have published with this report. They fear, however, that no effectual remedy has yet been formed to extirpate this most mischievous worm. They invite further attempts to destroy this enemy of our favorite fruit tree.

Respectfully submitted,

P. C. BROOKS, *Chairman.*

HANOVER, OCT. 19th, 1830.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN — The cheapest and most effectual mode of extirpating the Borer that attacks the apple tree, which has come to my knowledge, is, the application of sharp, coarse gravel, applied as follows: viz. dig off the turf about 4 inches deep, 6 inches to a foot from the tree; spread about half a common cart-load of the afore described gravel, so as to come in close contact with the tree — this article the borer dislikes, and immediately makes his escape; — this has been entirely and completely successful in my orchards for three years past; it may have been tried by others, but I have seen no account of it.

I would recommend a general trial the ensuing year, having the fullest confidence in its entire success.

Very respectfully,

Your most obedient and humble servant,

DANIEL PROUTY

REPORT OF THE COMMITTEE ON THE BEST CULTIVATED FARMS.

The Committee appointed by the Trustees to examine and consider the claims for premiums for the best cultivated Farms, submit the following Report:

The Committee have been disappointed to find only two applications for premiums, for the best cultivated Farms. They flatter themselves, however, that this has not happened through any indifference to the subject, among our intelligent and respectable farmers, but to its novelty, and their not receiving notice in season to comply with the conditions prescribed. They are the more confirmed in this opinion, from finding that one of the applicants states, that he received information that such a premium was offered, only two days before he made out his statement on the 18th of October.

The public will perceive, that the Trustees have appropriated a considerable portion of their income to this object. It was done after much consideration, and a full persuasion that it would prove useful. The only doubt they have ever entertained of its expediency arose, from the district, over which the society extends, being so large that it would not be practicable for the Trustees, personally, to visit and inspect the farms of the applicants. In this respect, the local or county societies have a great advantage over ours. They can inspect the farm of every applicant, and verify or disprove his statements with their own eyes. Premiums for this object have been granted by some, if not all of these societies, for several years past, and in the judgment of your committee, are among the most profitable to the public that can be proposed.

To remedy these disadvantages on the part of this society, as far as possible, the Trustees accompanied their offer of premiums, with a requirement of a full and particular statement by every applicant, of the number of acres in his farm, the quality of the soil, the proportion of tillage, mowing, and pasture, his manner of making manure, the quantity and manner of using it, the rotation of crops he found most successful, and the quantities of those crops, and other particulars specified in their publication, in January last, announcing the premiums they proposed to give. These statements, it was intended, should, like specifications annexed to patents for manufactures, be so full and particular, as to enable any intelligent farmer who should read them, to adopt the whole, or so much as he thought applicable to any of them, in the management of his own farm. Applications, it was expected, would be numerous, and the statements accompanying them, when published, it was thought would impart to agriculturists information adapted to their case, and on which they might with safety rely. By these they might learn the opinions and practice of skilful and practical farmers, who cultivated the same kind of soil, and paid like prices for labor with themselves. The high character of our respectable farmers for veracity and fairness, was considered a sufficient pledge against any intentional misrepresentations or misstatements; and if it should happen that some of the statements should be a little exaggerated, it was thought the evil could not be great; since at worst it would be the statement of a good farmer of what he considered the best way of cultivating such land, or perhaps a slight exaggeration of his crop. Even this might be more safely trusted, and be more useful, than a mere theoretical essay of an inexperienced man.

The Trustees were sensible, that in requiring this particular statement from applicants, they imposed on men some care and trouble, but it was believed they would not be unwilling to submit to a necessary degree of both, for the benefit of their brethren; and that they might also justly feel some gratification in exhibiting to the public the way and means by which

they successfully pursued the most honorable and useful calling of a citizen. They intended, moreover, by the liberal premiums they offered, to bestow a bounty on the successful candidates.

These are some of the motives and views which influenced the Trustees in establishing premiums for the best cultivated farms; and they still cherish the expectation that a generous competition for them in future years, will render them a successful means of conveying practical information, founded on actual experiments, to the agriculturists of our country.

Mr Erastus Ware, who for several years past has been tenant of a farm in Salem, belonging to the heirs of the late Col. Pickman, has claimed a premium for this farm. By his statement, which will be published, it appears that the farm contains 428 acres, of which 300 are rocky and broken land, and used as a pasture; 63 are English mowing, 44 salt marsh and meadow, and 21 tillage.

This farm is situate near a market town, Salem; and the principal object of the tenant is to produce milk to supply that market. He appears, also, to derive a considerable profit from apples. He enjoys, moreover, the advantage of purchasing manure when needed; and what is better, of making it from eelgrass, kelp, and rockweed, which he gathers from the beach; and the former, eelgrass, puts into his hogpen and cowyard, and the latter spreads green on his grass land. Bog mud he likewise carts into his barnyard, and mixes with other manure.

Mr Ware has not given so particular an account of his rotation of crops as could be wished, but as his purpose was to keep as many cows as his farm would support, it is to be presumed he kept his land up no longer than was necessary to subdue, mellow, and renovate it.

His potatoes were principally raised on land newly broken up, on which manure, at the rate of eight or ten cords to the acre, taken from the barnyard, and composed of litter and deposits of the cattle, was spread and ploughed under the sod.

He states that he has found fresh or long manure best for corn and potatoes, and the old and rotten for small vegetables, especially tap rooted articles. This, it is believed, is no new or uncommon opinion. Mr Ware also, says, that he never puts manure of any kind on his land the year he sows it with small grain, that he usually lays it down with barley in the spring, and that he has often been successful in taking off a crop of early potatoes in the fall, and sowing grass seed alone upon the land the same year. The crop must be gathered early, to render this practice advisable. His practice, he says, has been to sow a peck and a half of herdsgrass, and three pecks of redtop to the acre. These quantities, we believe, are greater than are usually sown, but his crop of grass, nearly two tons to the acre, for more than sixty acres together, seems to prove that the seed was not unprofitably expended. In many parts of the state, it is to be feared, farmers suffer from being too sparing of their seed.

It is worthy of remark, that it is the opinion of Mr Ware, founded on considerable experience, that Indian corn derives no support to the stalks, nor any other advantage from hilling, and that the roots will be better nourished, and the corn less likely to be injured by the drought or wind, where the land lies nearly flat, than where it is drawn up around the stalks in a high hill.

The statement shows that this farm has been cultivated with judgment, economy, and skill, in husbandry; and this impression, we think, its appearance would make on any agriculturist who should happen to pass by it. The barns are large, but one of them is on a model for saving and preserving manure and vegetables for the use of the stock in the winter, which might be adopted with advantage in smaller buildings. The crops of the last year taken together were large, and it is believed few, if any, farms in Massachusetts will be found to have yielded a greater profit to the cultivator. The expense for labor, it will be seen, was small, in proportion to the work done. His fifty cows, averaged 277 gallons of milk for the season,

which was the principal, and probably the most profitable, product of the farm.

As the milk was sent to market instead of being manufactured into butter and cheese on the farm, an account of the management of it possibly may not be so generally useful to agriculturists, as a like intelligent account of the management of a dairy farm might prove. We think, however, the manner in which Mr Ware has cultivated this farm, and the great product he has obtained, which is among the best tests of skilful husbandry, deserve great commendation and entitle him to a premium.

The committee think it also deserving of special notice, that Mr Ware carried on this extensive farm in the neighborhood of a great market town, without the use of ardent spirits, except for medical purposes. It appears that the laborers were supplied freely with family beer, molasses and water, and cider with their food, and nothing more. This practice the committee consider a saving of expense to the farmer, and health to the laborer; and although not very uncommon at this day, it is on a large scale and highly creditable to the parties, and it is hoped will serve to encourage others to imitate their example. The committee recommend that a premium of $75 be awarded to Mr Ware, for the skilful and successful manner in which he has cultivated his farm.

A claim has also been made by Jonathan Allen, Esq. of Pittsfield, in the county of Berkshire, for a premium for his valuable farm in that town. The farm contains 250 acres, and appears to be improved principally as a Sheep Farm. It is washed on one side by the Housatonic, which annually overflows a tract of 40 acres of meadow, bordering on it, and leaves a deposit on the land that renders any further manure or dressing unnecessary. From this tract, if Mr Allen is not mistaken in his estimate, he gathers annually from eighty to ninety tons, better than two tons and a quarter to an acre, of the best of English hay. A young orchard of about eighteen acres, and about five acres more of the upland, are laid down to grass for hay; the rest of the farm is pastured and tilled alternately.

The rotation of crops he has usually practised, has been wheat or rye the first year, Indian corn or potatoes the second, and the third to lay the land down with oats, or some other spring grain, and herdsgrass and clover. His practice is to sow four quarts of each, but it is to be observed that it is for pasture, if that ought to make any difference in the quantity. He lays down in this manner about ten acres annually.

Mr Allen informs us that he has tried different seasons and ways of sowing grass seed, viz. — in the fall with rye, and alone in October after taking off a crop of corn, and upon the snow covering wheat or rye, and in the spring with oats or other spring grain, and that he is satisfied the last is the best time and way of sowing it. He observes that he made several experiments of sowing grass seed alone in the fall, but always found that the grass did not get to maturity the next season.

We are informed that a committee of the Agricultural Society of that county, judged that as many as three or four acres, out of eleven acres of corn planted by him this year, would yield as much as 90 bushels to the acre, and awarded him a premium for it. The land on which this crop was raised was broken up the same year, having been manured on the grass for three or four years before, and was dunged in the hill with manure from the hogpen, when it was planted.

Mr Allen has not stated the quantities of manure used by him in any case, and as to most of his crops has given us only an estimate of their amount. This omission, we suppose, may be owing to his not receiving the notification of the Trustees offering this premium, and prescribing the particular information that must accompany his application, until his manure had been applied and most of his crops gathered. The first notice he received, he says, was only two days before he made out his statement, viz. the 16th of October.

The committee much regret this accident, but they consider that the utility of the premiums on farms will essentially depend on their obtaining from the applicants a precise specification of their whole process of carrying them on, and of the

crops they yielded; and that from the want of this particularity in Mr Allen's statement, the Trustees would not be justified in awarding him a premium.

WILLIAM PRESCOTT, *Chairman.*

[To Benjamin Guild, Esq.]

PITTSFIELD, OCT. 18, 1830.

DEAR SIR. — On Saturday the 16th inst. was the first time that I saw or knew of the premiums offered by the Massachusetts Agricultural Society, for the best improved farm. I therefore shall be unable to make all the statements I wish to make, with that accuracy that is desirable and which may be required, but I shall make an attempt. I therefore offer my farm which lies in the east part of the town of Pittsfield, upon the Boston and Albany stage road, containing two hundred and fifty acres or thereabout. The soil alluvial and loam; which farm I purchased ten years since and for which I paid nearly 14,000 dollars. I have forty acres of good wood land, principally covered with the sugar maple. I have also in one square lot forty acres of meadow, almost perfectly level, and irrigated or overflowed by the waters of the Housatonic river, (by which it is bounded on the east,) in the spring of the year when the snow melts away, generally, and sometimes twice or thrice in a year, so that it never requires any manure, and I have nothing to do but to keep up my fences and cut the grass, which is all of an excellent quality, consisting of herds or timothy, clover and fine English, and produces annually from eighty to ninety tons. This lot lies upon the east side of the road, opposite to my house, and the residue of my farm upon the west side of the road, pretty nearly in a square form, a little elevated above the meadow, say 8 or 10 feet, and rises but little to the western extreme of the farm. I have an orchard lot consisting of about eighteen acres, which I mow, and obtain between twenty and thirty loads of excellent hay. I have also mowed five acres in another lot, which was seeded two years since, which produced

five or six loads, making in all between 120 and 130 loads of first quality of herdsgrass and clover hay, which we have estimated at one ton to the load as we get in, well made. The residue of my farm consists of pasturage and tillage, say 147 acres, all good, which I have improved alternately for pasture and tillage by a rotation of crops, first for wheat and rye, then corn, then oats or other spring grain with clover and grass.

I have improved it the present season as follows; of winter crops, 12 acres of rye which was an excellent crop, but not measured, and two acres of winter wheat which was sowed upon corn ground after the corn was taken off, and produced, as it was sowed rather too late, but 32 bushels. I have also raised this year 5 acres of oats, which produced 122 shocks, some of which we have threshed, which have yielded two bushels per shock; if the whole should yield in like manner, the five acres will give 244 bushels, or nearly 50 bushels per acre, upon which land I had beans and oats last year. With a little manure I also sowed one bushel of marrowfat pease, which supplied my family and several of my neighbors with green pease. I harvested eight bushels well dried and fine for seed. I have also on my farm two acres of potatoes. I have dug and got in one acre only, which produced 296 bushels, besides what were dug for use for several weeks, — so that I can safely say that this acre yielded something more than 300 bushels of the flesh color, and worth double the common potatoes.

I have raised this season about 11 acres of corn of the small early eight rowed ears which is a very good crop, and will produce as determined by a committee of an Agricultural Society, 90 bushels to the acre, that is, for three or four of the best acres; for which they gave me the Society's third premium. The land on which it was raised has been mowed for three or four years, and last year broken up and hog-dung put into every hill, — hills at three feet apart. My farm is divided by a lane through the whole and fenced on either side, and then divided into 10 and 20 acre lots opening to the centre lane, so that I have more than 6 miles of fence, a part of which is half wall.

I have also raised this year two acres of spring rye, which I have not threshed, which I think will give me 20 bushels per acre. — I have also raised twenty acres of small white beans which I have not yet gathered, and which I estimate to yield fifteen bushels to the acre, or about 300 bushels in all. This field was planted two years since to corn and then to rye and oats. — I have ploughed and summer-fallowed twenty acres of old pasture where my sheep have run, and sowed it to rye and three acres more to winter wheat; all sowed about the last of August now looks finely, and if nothing befalls it, I think I may safely calculate upon thirty bushels to the acre. — The number of apple trees in my orchard is 149. Six years since I put in 1000 grafts by contract, principally of winter fruit, such as Greenings, Spitzenbergs, Gilliflowers, Russets, Golden Sweetings and Seeknofurthers, &c, &c, from which I last year made 36 barrels of cider and put up about 100 bushels of fine winter apples. To my trees I have done nothing but trim and scrape. This year, owing to a late frost, I shall not have five bushels in all. My manner of making cider is the common way. As to saving grass seed, I usually seed down about 10 acres annually with four quarts of clover and 4 quarts herdsgrass to the acre. I have made several experiments. After taking off a corn crop, I have ploughed and sowed nothing but grass seed; this was done in the month of October, and it took well, but did not get to maturity fully the next season. I have also sowed with rye in the fall, and also upon snow covering wheat and rye, and also in the spring with spring wheat, rye and oats, and I am satisfied that to sow clover and herdsgrass in the spring with oats is the best time and way. Another experiment may possibly be useful. Eight years since I ploughed and fenced about two acres of good land upon which I planted one bushel of butternuts, one ditto of walnuts, and one bushel of chesnuts, and smaller quantities of apples, peaches, pears, quinces, hazlenuts and filberts, most of which failed save only a few peaches, several chesnuts and filberts. The filberts I have transplanted near to my house,

and have now probably 100 bushes which have borne considerably the two last years, as large as any of the imported. The late frost prevented their bearing this year, but I have no doubt that they can be grown here plentifully with little trouble. My barn is 100 feet long and 40 feet wide, standing east and west, with a floor through it lengthwise over which is another floor, each twelve feet wide. Upon the south side of my barn I have a tier of stables extending the whole length 12 feet wide, which is sufficient to put up 25 head of cattle. I have one shed extending from the west end of my barn south 120 feet, half of it 20 feet in width and the other half 14 feet, capable of holding 30 or 40 loads of hay over head. I have three or four other sheds temporary or of less value. My barnyard is 120 feet square divided by a line of fence through the centre each way making four yards of about 60 feet square, with a shed for each and a well of water in the centre, from which I water each yard, in each of which I have wintered about 100 sheep, and make my manure principally by bedding them with straw. I have kept the last year two yoke of oxen and one yoke of steers, five cows and nine head of young cattle, three horses and one colt and 425 first quality Merino and Saxony sheep. We have made butter and cheese only enough for family use. Although my stock of cows are of the first quality, yet my family is large and consume all they produce; for one of my cows, which is only 3 years old, I last week received this Society's first premium as the best among 37 cows offered for premium; her calf now is only four weeks old, and she is a descendant of the stock of cattle called the Gore breed, I believe from a bull imported by the late Governor Gore; at any rate, from my connexion with the Berkshire Agricultural Society, I was induced to purchase some of the finest cattle of our part of the country, and for the ancestor of this cow I paid $100. My other cows and stock are of the *Holderness* stock. Of swine, I only keep and fat enough for family use and some little surplus to pay laborers. I am now feeding 8 of the Byefield breed, a part of which I think will

weigh about 300⅞ lbs. each. As to the amount of labor, for the last year I have hired only one man, and have two boys almost men; and in haying and threshing, day laborers, which in all probably costs me $140 or $150 inclusive of board. I would also add that in consequence of tilling so much land, I have hired 100 of my sheep pastured the past summer.

To recapitulate —

63	acres of meadow land
12	do. winter rye
2	do. do. wheat
5	do. oats
2	do. potatoes
11	do. corn
2	do. spring rye
20	do. beans
117	
20	acres sowed to winter rye
3	do. do. to do. wheat
140	
40	wood
70	pasture
250	

It will be seen that I have mowed and tilled this year 140 acres, 17 of which has been seeded down to grass.

My stock is as follows, viz. 425 sheep, 20 head of cattle, 4 horses, 10 wild geese, and a few India geese presented to me by Gorham Parsons, Esq. a few years since. Poultry in abundance, of many sorts.

This rough draft was drawn up last evening and this morning in much haste, and is imperfect for want of more time. Yet it is as I believe true.

I am, dear Sir, very respectfully

Your obedient humble servant,

JONATHAN ALLEN.

Berkshire ss. Pittsfield Oct. 18, 1830. — The foregoing was sworn to before me as true.

JOSHUA DANFORTH, *Justice of the Peace.*

[To the Committee of the Massachusetts Agricultural Society on Farms.]

GENTLEMEN — The farm, known by the name of the Pickman Farm, of which the subscriber is at present and has been the tenant for nearly eleven years, is situated in the southeasterly part of Salem; and comprises 428 acres of pasturage, tillage, and mowing. The pasturage includes about three hundred acres, and is broken and rocky, being similar to the land in Salem Great Pasture so called, (which bounds the Salem turnpike,) from which a good deal of it has been taken by the purchase of cow rights in that pasture at different times. No attempts have been made to improve this pasture-land, other than by clearing the bushes, and draining some low parts, as there is no prospect of a remuneration for such labor.

The amount of land under tillage the present year, has been twentyone acres, and the amount of upland, or English mowing is sixtythree acres. Of the tillage and mowing land a considerable part consists of a thin, gravelly soil of better than a medium quality, and favorable to all grain crops; and another part consists of a clayey soil resting upon a clay pan, retentive of moisture, and yielding good crops of grass and potatoes, under liberal manuring and cultivation. The farm is well watered; and a good deal of the mowing and tillage is so liable to be overflowed in the spring, and is so saturated with moisture, that much labor has been necessarily expended in draining, and much of it when laid down to grass has been laid down in beds; some of the most productive grass land on the place, has been in this way reclaimed from an unprofitable marsh or swamp, and made to yield very large crops of grass. We have no land on the place, which is irrigated by any artificial process. There is of meadow land not more than five acres, which is never tilled; but which is drained and yields

abundant crops of good stock hay. There are of salt marsh, thirtynine acres, yielding good crops of black grass; this is ditched, from which well known advantages arise; but no other labor is expended on it, other than that of gathering the hay.

Of the cultivated land the present year —

Five and one half acres	were sown with	Barley,
Seven " "	planted with	Indian Corn,
Four and three fourths,	" "	Potatoes,
One acre,	" "	Mangel Wurtzel,
" third of an acre,	" "	Onions,
" half acre,	" "	Winter Squashes,
" acre	" "	English Turnips.

Several other smaller and scattered pieces, the extent of which could not be easily ascertained, were planted with English Turnips, Garden Vegetables, Melons, &c; and the missing places in the field of Mangel Wurtzel sowed with Ruta Baga.

The manure used on the place has been principally made by the stock kept in it. By the terms of my lease, I am allowed to expend one hundred dollars a year in manure; but having obtained a considerable quantity from the removal of an old barn, I have purchased for the last four years, not more than to an amount of sixty dollars a year. I have carted into my barnyard considerable quantities of bog mud; and obtain from the neighboring beaches some sea-wreck — such as eelgrass, which is thrown into the pigstyes and cowyard; and kelp and rockweed, which is carried and spread immediately on the grass land.

For small grain crops no manure is applied by me on the year of their being sowed, unless the land is very wet and cold. My barley was raised on ground, on which the preceding year I had a crop of potatoes, which were well manured, with coarse manure spread and ploughed under the green sward. My Indian corn this year, contrary to my usual practice, was raised on land which was planted the preceding year with In-

dian corn. I have found a crop which shades the ground most completely, is most effectual in destroying the squitch or twitch grass, and this was an inducement to plant corn a second time on this ground. The manure applied was at the rate of about eight cords to an acre; was taken from the barnyard, and spread on the ground and ploughed in.

My potatoes, with the exception of a few raised on the borders of some of the fields, were raised on land newly broken up; and the manure at the rate of eight or nine cords taken from the barnyard, composed of litter and the deposits of the cattle, was spread and ploughed under the sod.

The soil on which my Indian corn was grown, was of a high gravelly nature as before described; and that on which the potatoes grew was flat, moist, and clayey. The potatoes were hoed twice and harrowed between the rows once. The corn was hoed three times; but was not hilled, as has been customary; and upon a comparison of that not hilled with a small piece, which was in some degree hilled, after a severe gale to which we were exposed in August, I am satisfied that no advantage by way of supporting the corn is gained by hilling, as was formerly practised. My opinion is, that no other advantage is gained by the practice of hilling corn; and that corn raised on a flat surface, where the weeds are destroyed, and the ground kept loose, is by no means so likely to suffer by drought, or to be injured in its roots, or impeded in its search after its proper nutriment, as where the ground is drawn up around the stalk in a high and steep hill.

The manure applied to my other crops was of the best kind I could procure; and applied generally, and as nearly as can be ascertained at the rate of about ten cords to the acre. For crops of potatoes and Indian corn, my experience leads me to apply my manure green and fresh; for the smaller crops, and especially tap rooted plants, I prefer manure that is fine and well rotted.

The amount of crops raised this season on this farm is as follows.

Of Potatoes	1220	bushels.
" Mangel Wurtzel	600	"
" Ruta Baga	50	"
" English or Flat Turnips	850	"
" Onions	150 ~~750~~	"
" Indian Corn	280	"
" Barley	137	"
" Squashes	3 ~~35~~	tons.
" Cabbages	3½ ~~35~~	"
" Cider	120	barrels.
" Apples of grafted fruit	1200	bushels.
" English Hay	115 ~~775~~	tons.
" Second Crop	8	"
" Fresh Meadow Hay	6	"
" Salt Hay	40	"

Of Garden vegetables the family has had an abundant supply, and many loads have been marketed of which no account has been taken. The severe gale in August very much injured the crops of corn; and shook from the trees nine hundred bushels of unripe apples, which were manufactured to very little advantage into cider, and lessened much the expected profits of the orchard.

Of the above crops, the grain, vegetables, and fruit were matter of exact measurement; the amount of hay is given by as accurate an estimation of it in each load by an experienced and disinterested individual, as could be obtained.

The hay raised on the farm is generally a mixture of herdsgrass and redtop, with some clover. The amount of seed used in laying down to grass, is one peck and a half of herdsgrass, and three pecks of redtop. Of clover seed, enough is usually found in the manure; and cannot be sown to advantage in rich, moist land. When I lay down land to grass in the spring, I sow barley with the grass seed; but I have been

very successful in laying down land to grass in the fall, after taking off a crop of early potatoes, in which case nothing but grass seed is sown.

The number of bearing trees on the place is as follows —

Of Apple Trees (almost all engrafted fruit)	763
" Pear Trees	65
" Cherry Trees	50

In addition, I have a nursery containing 3000 trees, most of which have been engrafted or budded.

Of the apple trees, some of them are in orchards, the ground about the roots is cultivated; others of them are planted by the sides of the stone walls; and all of them are carefully pruned. In the mode of making or managing my cider, I have nothing peculiar, it being no object with me to make cider other than to use up the windfalls and the refuse of the winter apples.

There are on the farm two large barns, besides convenient sheds, cider house, and necessary out-buildings. One of the barns is in length 100 feet; in breadth 35 feet. The other barn is in length 114 feet; in breadth 42. This barn, in which the live stock is principally kept, has a cellar under the whole; the main part of which is for manure, and receives all the deposits of the cattle, and a portion of it is enclosed for a vegetable and fruit cellar. This barn has been recently built, and has a barn floor through the whole length; and the cattle are tied on one side; on the other the hay comes to the floor. The barn room is not large enough for stowing all the hay, and considerable quantities are necessarily kept in stacks out of doors.

The Live Stock kept on the place is as follows —

Oxen	6	Bull	1
Cows	50	Horses	3
Heifers	5	Fatting Swine	9

The weight of Pork is not yet ascertained, as the hogs have not been killed; but the average weight of my swine the last

year was 300 lbs. each; this year will probably give the same result.

The chief object of the farm, is that of supplying milk in Salem, where it is sent in summer twice a day, in winter once; a distance of about two miles.

The number of gallons sent to market during the year ending with the first of the present month is . 13,870 gallons.
Butter, made in the same time . . 550 lbs.
Cheese, " (called four meal cheese) . 600 "

Of calves in the same time, there has been received for those sold, $154. The others have been killed as soon as the milk of the cow was fit for use; and their skins sold for fifty cents each; the carcases given to the hogs. The cows are all of native breed; and are generally purchased when young from the country, as stock of this description cannot in my situation be raised to advantage.

The amount paid for labor the past year, has been eight hundred and forty three dollars, $\frac{37}{100}$ . . . $843 37

The amount received for extra labor in improvements on the farm, in labor on the highway and other cases, has been two hundred and sixty dollars, . . 260 00

Balance chargeable to the farm, $583 37

The laborers on the farm are freely supplied with family beer, molasses and water, skim-milk, and cider with their food; but no ardent spirits are used on the farm, excepting for medical purposes. In the above amount of labor, no female labor is included; nor is my own labor on the farm, or in marketing, or in general superintendence included.

I have sought to answer fully, and as far as is in my power, the various inquiries of the society; but any further suggestions I shall be happy to attend to. I have been bred to agriculture from my childhood, but have had no other advantages than those derived from actual experience. So far as my opinion on the subject may be deemed of any value, it is in favor of

an alternation of crops on the same land, and an occasional change of every kind of seed.

All which is respectfully submitted.

ERASTUS WARE.

SALEM, DEC. 1830.

Essex, ss. Salem, 7th Dec. 1830. — Then Erastus Ware personally appeared and made oath that the aforewritten affidavit of nine and one eighth pages by him subscribed, was, according to his best belief and knowledge, true.

Before me,

JONATHAN P. SAUNDERS, *Justice of the Peace.*

REPORT OF THE BRIGHTON MARKET FOR THE YEAR 1830.

Report of the Brighton Market for the year 1830, *which will furnish to the Farmer, the Drover, and Grazier, very important information.*

[From the Boston Patriot and Mercantile Advertiser.]

At the request of several gentlemen, we have arranged the following Report of the Brighton Market for the year 1830. The slight degree of hostility exhibited on the first appearance of our reports, has given way to a more just and liberal feeling; and it is now acknowledged that they have exercised a favorable influence on the market, and tended to increase its importance and usefulness. These reports, given, we believe, with the utmost impartiality, furnish to the farmer, the drover and the grazier, similar information to what the merchant and manufacturer derive from Prices Current; and he goes on to buy or sell, with a degree of confidence otherwise unattainable. Before our reports were made, there would be at one time a glut, at another a scarcity; and the grazier who had heard of high prices, would send a large number of cattle to market, which would meet others pressing from all quarters, and be

obliged to sell at a loss; while the report of a glut would cause him to retain his cattle, when they might bring a fair price.

First Quarter, ending March 30.

4863	Beef Cattle, estimated sales		$176,009 75
922	Stores,	" "	11,064 00
11734	Sheep,	" "	26,401 50
2301	Swine,	" "	9,204 00
			$222,679 25

Second Quarter, ending June 30.

3005	Beef Cattle, estimated sales,		$102,170 00
344	Stores,	" "	6,880 00
5090	Sheep,	" "	9,531 67
2167	Swine,	" "	8,668 00
			$127,249 67

Third Quarter, ending September 27.

5254	Beef Cattle, estimated sales,		$157,620 00
4820	Stores,	" "	53,020 00
45367	Sheep,	" "	68,050 50
5202	Swine,	" "	18,207 00
			$296,897 50

Fourth Quarter, ending December 27.

24645	Beef Cattle, estimated sales		542,190 00
7600	Stores,	" "	83,600 00
70506	Sheep,	" "	111,634 50
9969	Swine,	" "	34,891 50
			$772,316 00

Recapitulation.

Beef Cattle,	37,767	Sales,	$977,989 75
Stores,	13,685	"	154,564 00
Sheep,	132,697	"	215,618 17
Swine,	19,639	"	70,970 50
Whole No.	203,789		$1,419,142 42

The above is gathered from our weekly reports, and may be considered nearly correct as to numbers, but as to sales we may have erred. It is, however, not exaggerated. In the last quarter of the weekly reports, the beef cattle have not been divided from the stores, but we have come to a division, as near as we could, from our judgment at the time.

In 1828, ten weeks from September 29, (which are all the minutes of that year we are in possession of) 21,546 cattle, 39,831 sheep, and 7127 swine. In 1829, ten weeks from September 28, 21,271 cattle, 31,611 sheep, and 8,524 swine. In 1830, ten weeks from October 4, 29,549 cattle, 60,179 sheep, and 7897 swine. In 1829, six months from July 6, 31,479 cattle, 81,602 sheep, and 11,702 swine. In 1830, six months from July 7, 42,319 cattle, 115,863 sheep, and 15,171 swine.

More cattle, sheep, and swine were probably driven the past year to this market, than were ever before in one year. The beef cattle, in particular, have been, through the fall season, of an uncommonly good quality.

WOODLAND AND FOREST TREES.

[To the Corresponding Secretary of the Massachusetts Society for Promoting Agriculture.]

From a variety of circumstances, my attention for a series of years has been necessarily drawn to the oversight of several considerable tracts of wood land, in order to effect a right

management of them. This attention has become a habit and a source of gratification to me. If any apology is due for the too frequent * remarks on this subject, I must refer to the partial persuasion of my friend Mr Lowell,† whose valuable instructions and labor as to the forest, as well as the garden, have been so useful. On the right management of the wood lot, our agriculturists have been heretofore again and again inquired of, and it is most obvious that many opinions offered have been erroneous. Some of these will be stated, to show the knowledge aimed at by the society.

It will be our endeavor to submit facts and inferences, drawn from repeated experiments and more intimate experience which time has afforded. These may be useful so far as they are sustained by the judgment or coincidences in the opinion of others.

The first question on this head submitted by the society is: 'Whether the growth of wood for timber and fuel, be equivalent to the consumption in your vicinity?' The universal reply has been indicative of an alarming decrease in Massachusetts, of both timber and fuel, and that a recurrence in the country is had in many places to peat, as a substitute for the latter; while recently it is well known, that in populous places, and near the sea coast, as well as in many of our manufacturing establishments, there is an increasing and extensive use, particularly of the coal of our country, as a substitute for the article of wood. Nor is this to be regretted; on the contrary, it seems most wisely ordained, that while the discoveries of the age call for an increasing use of fuel, as to which the surface of the earth could give us no adequate supply; there are beneath us and at hand, inexhaustible resources for every possible demand. It is not to be denied, however, that these are but substitutes—and very inconvenient ones in many places; nay, more, that they are generally recurred to from the force of necessity. To most of those long habituated to it, the cheerful

* See No. 1, vol. 6; No. 1, vol. 7, No. 3, vol. 8; and No. 1, vol. 9.

† See his Translation of Michaux, and his very many useful observations, as well on this as other subjects, in the preceding volumes of this Journal.

blaze of a wood fire, has a powerful attraction. But if wood is abandoned for fuel, and no means of encouragement are given by government, whence is our timber, &c, to be derived. Here with great respect a consideration is submitted to our legislators, which, though familiar to many, may not, as to its effects, be so well known to all.

By a law passed March 4, 1829, it is enacted, 'That all wild or unimproved lands, shall hereafter be assessed at *six* per centum instead of *two* per centum, on the value thereof!!'

Excesses in legislation are apt to operate injuriously, especially when they effect changes in long established usages. The effect has been herein sudden and violent in its operation on farmers. Feeling the *threefold* weight of the *tax*, thus *increased* upon a *capital* not immediately *productive to them*, they have laid the *axe* to the *root* so heartily, that wood at 12 to 20 miles from Boston, has actually been depressed in value more than one third, and timber is of little more value than for fuel! This was probably unforeseen by the legislature, and is to be lamented. But it will meet the attention it merits, from the watchful guardians of the interests of the commonwealth.

The next inquiry has been, 'what measures are taken to provide against the inconvenience of future scarcity.' To this, the answers given are much to be regretted. In most instances, the replies are, 'the wood lots are not fenced from the habit of economy and other motives, and where cattle run at large on the commons, they eat and destroy most of the sprouts from the stumps of late fallen trees.' In fact, unless there is a surplusage of young shoots and but very few cattle to browse, the *whole are cropped!*

To confirm this, I will state an experiment lately made. On an enclosure, partly of good pasture land, in a spot the most retired from cultivation, on the north side of a rocky precipice, where there was not a blade of grass, and at some distance from grass feed, about ten loads of wood in scattering growth, on about an acre of ground, was cut off. Some young bushes and

the brush were left on the ground to discourage the approach of cattle. To furnish sprouts or browse, and to ascertain how far cattle would be induced to crop the shrub oak, an acre or two of young growth were cut over. The latter were very sparingly resorted to — while I was unable, with the assistance of two persons, to find one sprout of the walnut, oak, and other trees, untouched by the cattle.

It is unfortunately too true, that cattle will crop all the shoots of young forest trees which they can reach, constantly tempted by their sweet sap; thus discouraged and gradually destroyed, they give place to bushes and shrubs, which instead of affording nutriment to cattle, or being advantageous to the husbandman, make the soil not merely *useless*, but an occasion for *heavy expenditure*.

Some of the evils invariably arising to lots recently cut over, by browsing, will be stated. First, a tree or sucker thus deprived of its main shoot, it is said, never grows straight, or becomes a timber tree, and its thrift is injured.* Next, if the trees are cut in the proper season, when the sap is said to be down or the leaf is off, in the following spring, the circulation of the new system then puts forth its effort, strongly for the needed action of the atmosphere, by the function of its leaves, &c. If this is not afforded, vegetative life is endangered, if not lost.

For these and other reasons which will follow in connexion with this subject, it is apparent, that, as relates to both of these questions, the 'growth of wood and timber.' — or the means of provision against future scarcity, the inroad, or browsing of cattle, must be prevented.

* A forcible demonstration of the power and the healthy functions of the leaf, and the effect of their loss, may not be thought out of place here, besides being somewhat analogous. Some years since, a tract of pasture land, about 15 miles from this city, appeared to be overrun with Sumach, (*Rhus typhinum*) so useful as a dye stuff. A worker in morocco urged the occupant to gather the leaves and dry them at $20 a ton. As there was a large family of children, it was set about in good earnest, and over five tons were gathered and paid for. It is not believed that five pounds of this material have grown on this land since!

The next question presented is, 'in getting your wood for fuel, do you pick the oldest trees, or do you cut clear?'

The reply from individuals, as well as societies, mostly given is, 'It is generally practised to cut the oldest and most decayed trees, leaving the rest.'

Our belief is, that our farmers have attained a better knowledge and practice, and that both experience and observation will well justify the now prevailing usage with them, of 'cutting clear.'

Where old and decayed trees only are selected, the growth becomes more and more scattering, and the young trees or suckers, deriving no vigor from the sun and atmosphere, fall into decay. This remark, with some others, may perhaps be deemed a repetition of what has been before said; but it is well to note what time has confirmed.

The cutting of two growths on several lots since the period alluded to, has passed under my observation. Some of these were demonstrative of the disadvantage of 'picking out the decayed trees,' as well as the benefit of cutting clear.

The practice in one instance had been, in times long gone by, to pick out the trees as wanted, for timber, or fuel, and the growth had become very scattering, and of no sensible increase; though most of them were of white oak, and from ancient growth and great size, had become very valuable; yet when the lot was again cut over, there were more cords of wood, and a greater profit in the latter, than in the former case. The first was a product of more than a century — the latter of only thirty years!!

It would be a waste of time to multiply remarks, as might be done, on this head.

It may here be observed, that the information sought for by the society, has relation to 'our wood lots, and the best means of production for fuel' — as to our timber, there is no great scarcity at present; there seems to be enough to meet the demand. But the principles of production, are widely different, in relation thereto. Timber, it is said, to endure long, must be

matured by age, of thinner growth, &c. But as to this, our country itself, since its settlement, can hardly be said to have had a reproduction!!

The next question which has been proposed is, 'what method is best calculated, to increase the value of woodlands?'

To this the answers given are general and indefinite, alluding mostly to the keeping out of cattle. It is here intended to submit some reasons for consideration, as well as the result of several experiments of different modes, by which it would seem that the cutting clear and having a reproduction, is by far the most promising and effectual mode to be pursued with us.

And first, there is generally on all farms some rough or rocky soil in 'wood,' unfit for culture, and which would be unproductive in any other appropriation.

Next, as to the certainty herein — there is no known instance of a failure in a regrowth. This has been often predicted, particularly on some lots where the tops of the trees were mostly dead; this was a score of years ago, and there is now a very thick growth, almost fit for the axe! It will be said that there must be a period of decay in trees — that this is the course of vegetation, and indeed the law of nature!

However true this may appear, it may yet be answered, that after cutting off an old lot even, there spring up innumerable young shoots, which seem to have been hidden, or inactive, beneath the surface, and then start into new life. The suckers, too, put forth with still more vigor, until the surface is so thickly covered that some are induced to thin the growth by a selection of hoop poles — at least to *early gain*, if not *ultimate advantage* — as to which opinions vary.

As to the general principle of the germination of suckers, it appears that the roots of old trees throw up their shoots at a greater distance, converging towards the stump, and gradually becoming more and more thick. In middle age they start nearer; while in younger trees they spring from the stump itself as well as about it.

A failure in vegetation from what would seem to be old age, is very rare; indeed in many cases where the roots of large trees have not put forth, a sufficient reason has appeared, (as is apprehended) in the modes of cutting. The farmer strikes inward and downward to the heart of the tree, and a hollow or basin is often left sufficient to contain several gallons of water. Fermentation is thereby had in every stage and process, and the apertures of the sap vessels are clogged, and as it were poisoned thereby.* This appearance has presented itself, and been so often noted by the writer, that the attention of agriculturists is solicited hereto.

If such is the effect of this practice, a remedy is easy, by cutting a notch or gap in the rim or exterior of the stump.

In closing, as to the inquiries of the Society which have preceded, it should be noted, our judicious farmers, it is believed, have generally of late been induced first to cut clear, as well as prevent the browsing of cattle on a recently cut lot, and next to appropriate certain portions of their farms (especially those least calculated for culture), to a reproduction of a growth of wood — and thus afforded the safest answer, as to the best modes to be adopted.

The importance of the subject in discussion, has further induced the Society, some time since, to offer 'a premium of One Hundred Dollars, for the best plantation of white oak, and some other trees raised from seed.'

It was doubtless a principal object to encourage efforts in bringing forward nurseries by planting the acorn, and a subsequent culture of the soil. This plan some have thought might be extended to a row culture in lots, coppices, &c. To

* To show the effect that may be produced on the most extensive roots and fibres of newly cut trees, the following fact is stated.

A grove as well as several rows of that pernicious tree, called with us the Lombardy poplar, unfortunately introduced by a bad taste, was not only cut off but wholly eradicated by the following method. On cutting down the trees, a hole of three or four inches was bored with an auger to prevent waste, and a handful or two of salt put on each stump — not a single sprout ever appeared above the surface. The same has been since seen in instances of other trees.

afford one experiment for inquirers, though on a somewhat different principle, I took about six acres of old pasture land, about seven years since, and proceeded gradually to plant thickly over the whole lot several bushels of acorns, chesnuts, &c, in the following manner:

A tongue of earth was raised by the hoe, and an acorn put beneath at a depth of two to three inches; then the sod was pressed down by the foot or hoe, to prevent a loss by birds, squirrels, &c; all stock was kept from the enclosure. Trees have vegetated to be sure, but they seem quite unthrifty in the tough grass-sward with which they feebly contend; and there appears at present, (as I had indeed apprehended) little room for much expectation from this mode.

At the present price of land and condition of the country, any attempt to raise a wood-lot by appropriating a valuable soil thereto, with the expense of culture, &c, may be found by far too expensive.*

We are now brought, in closing these remarks, to the utility of nurseries for the rearing of forest trees, which has been most strenuously urged in this Journal.

It is believed that the seed of a forest tree (particularly an elm or an ash,†) placed in a nursery at the time of setting out a number of trees of the usual size, in such cases may be afterward transplanted and added thereto, and present the largest growth.‡

If these views are correct, with the aid to be expected from the ardor and intelligence of the Horticultural Society, it will

* I have had covered very desirably with a thick growth, several barren spots which were offensive to view, by setting out two or three pitch-pine trees (*pinus rigida*), which is a most unwelcome intruder on a good soil to shed their seeds thereon. Probably to have gathered the cone at early frost, and to have scattered them on the soil would have had the same effect.

† From the extraordinary size of the tap root, or some other cause, I have had no success in transplanting the walnut or shagbark.

‡ An elm from the forest, set out at usual size, in 20 years gave 3 feet 4 inches.

An ash set out as above, gave 3 feet 2 inches.

An elm seed, planted in a nursery, and transplanted to a row, gave 3 feet 9 inches.

An ash seed planted as above, gave 3 feet 10 inches.

no longer be allowed ' as a mortifying fact, that the inhabitants of Massachusetts import most of their ornamental forest as well as their fruit trees from abroad.'

These remarks are submitted, ' not so much for any knowledge the writer may possess, but that the attention of others may be turned to the subject. Thus, every step in the progress of experience, will be towards the perfection of knowledge.'

I am, sir, yours, JOHN WELLES.

ASPARAGUS.

The following communication, from the Hon. John Welles, was first published in the New England Farmer. It contains much useful and valuable information.

Among the earliest and most valuable productions which the opening spring presents for our use, is that nutritive and healthy plant, Asparagus. It is really a subject of regret, that this should be so universally acknowledged as a great luxury, and on every account be so desirable — and yet, not be more invariably had, and conveniently placed, near the door of the cultivator, for family resort.

There seems to be but one reason that can, with any degree of satisfaction, be assigned for this, and that is, the supposed intricacy, labor, and expense of bringing forward what has been termed an Asparagus Bed. The fact is, that most works on agriculture, are so loaded with the requisites for a good bed, that it is not to be wondered at that some repugnance is had, and some delay suffered in the undertaking.

It is believed, that in our climate at least, most of the trouble and expense is needless ; and that a good and productive bed may be had in so cheap and simple a manner, that many who have been discouraged by the expense as well as the art and mystery of the process, will no longer be so influenced. But your readers have a right to expect some satisfactory reasons for this undertaking, before they engage in it.

The comparative results of several experiments will be stated herein, and some few observations submitted to the good sense of your readers, that they may draw their own conclusions and govern themselves accordingly.

One of my predecessors, in about 1765, from a wish for the convenience of a good asparagus bed, as well as a strong impression of the difficulties of having a good one, set about it in earnest. By all report, there was trenching or deep digging, paving with bricks at the bottom, a layer of manure low down, and much more dug into the soil. This, certainly, became a good bed, and it was always so considered. In about 25 years, or 1790, its decay was very observable, and it soon dwindled away to little or nothing. For some years, the privation was submitted to. But in about 1800, a new bed was made with the same labor and expense, except the paving. This too, proved a good bed. It lasted about the same time with the preceding, and some two or three years since, was allowed to go to grass.

About 12 years ago, while the last mentioned bed was in full bearing, I was led to think that much of the trouble might be avoided in the process and preparation for its culture. A piece of ground was taken on the same farm, of a deep rich soil. After a common corn crop was taken off, the land was ploughed and manured in the usual course. Holes were then dug 12 to 14 inches in depth, and about the same distance apart, and two or three shovels of compost manure was mixed with a part of the earth. The roots of a year's growth were then inserted at about six inches in depth. This bed has flourished, and been thought as productive as any whatever. I, at the same time, with a view of a more full and fair course of experiments, took a piece of land in another place of opposite character, being a thin light soil, and adopted a like course, and the result has been equally favorable. The only difference to be noted was, that the latter was more early in coming forward from the nature of the soil.

However rare it may be, that there is any over cultivation or preparation of soil for any vegetable production, it would seem here to be the case. The old forms appear to have been kept up, and to have discouraged a more general diffusion of this valuable plant. Doctor Dean, in his husbandry, has somewhat simplified this matter, but not sufficiently. The proposed mode of placing at 6, 8 and 9 inches, is quite too near. The duration of 10 or 12 years, is a mistaken one; it lasts with us double that period.

The management of the bed may be given in a very few words. In the fall of the year, it is important to cover it with horse manure; in the spring it should be raked off, and the bed lightly forked over so as not to touch the roots. If the bed from frequent weeding becomes low, it may be raised with dock-mud to advantage. This produces no weeds, while the saline particles are favorable to its growth. Where this cannot be had, any rich loam may be taken. Three years is agreed in as the most eligible period of cutting. No reason is perceived for supposing it a marine plant. The lightness of the hull, containing the seed, often may place it at high water mark where it may thrive well. I am, &c, J. WELLES.

LETTER FROM HON. JOHN LOWELL,

BOSTON, JAN. 19, 1831.

[To the Trustees of the Massachusetts Society for the Promotion of Agriculture.]

Will you permit an associate, who has for 25 years been connected with you, but who from ill health has been compelled to withdraw himself from your society, and labors, to make a few remarks on a subject of great interest to the cause of agriculture? The topic which I propose to discuss, is the cultivation of the various kinds of vegetable productions which we comprise under the name of grasses. I understand by this term, all those vegetables, which are consumed by domestic animals, as food in pastures, or as hay.

There certainly is no subject more important to those parts of our country which depend on raising, and fatting domestic animals of the useful classes, the ox, the horse, and the sheep.

I know very well, that I shall be met at the outset, by the reply of *practical* farmers, that we are not to be instructed on this subject. We know better than any theoretical farmer can know, what is best suited to our soils — we have herdsgrass, and clover, (white and red,) and red top, and we want no more. They are better for us than any of your outlandish grasses. Wait, gentlemen, I reply; there is one Yankee grass unknown to *many* of you, but well known to the owner of the extensive meadows on the Charles River, the fowl meadow grass. If this truly Yankee grass could be translated to all the meadow bottoms, the naturally moist, cold, half peaty lands of New England, their produce would be at least doubled. It is difficult to procure its seed. It is not for sale in sufficient quantities; whether from its ripening with difficulty or from whatever causes, it is not always a certain producer; but still its value is beyond all calculation. Low meadows are chiefly furnished with the different species of carex, a coarse, sharp, worthless grass, on which no animals but those which are nearly famished will feed, and on which those who do feed constantly decline. We have then one species of grass *not usually* cultivated, which is of inestimable value. It is no idle speculation, but sober fact, and unless a defender of ignorance will maintain, that the fowl meadow grass can only flourish in the Dedham meadows, our agriculture has much to gain by the active, earnest, assiduous propagation of this grass.

I have cited this solitary case, merely to gain a patient hearing. Of our three favorite grasses, the herdsgrass or timothy is in very bad repute in Europe. They consider it a very coarse and not a very nutritious grass. It is not extensively cultivated in any part of Europe on this account.

I am, however, disposed to admit, that it is with us highly valuable — but its value is limited by the following conditions: On low lands, or highly cultivated grounds, it yields a great

and a steady crop. It is less liable to lodge than any other grass. It falls in with our too careless habits of cultivation, because it may be cut in the month of June, or it will stand till August, at which last period it will be of about as much value as straw, though even then it will have a bright, and beautiful appearance, and be saleable. It is admirably adapted to innholders, and livery stable keepers, because it wears well. The youngest horses will find their powers of mastication sufficiently taxed in consuming a rack full of it in a night, and it will take nearly *the whole night* to effect this. In dry land, it soon runs out, and in all grounds it gives very little after crop. I believe all these propositions to be true. The red clover is never used in Europe, as we commonly use it. It is almost always employed as a green crop — as a succession crop to be fed down by various animals, and then turned under as a preparation for wheat. Indeed, as a hay crop it must be admitted to be of very small value. As we seldom use it in New England, as it is used in Europe and in the Southern States, I must consider it as a very inferior grass, for us. Its duration being so short, (for it only lives two years in any case) is a very serious objection to it. We are often deceived in this respect, because its heads ripen in succession, and new plants are always springing up in our grounds, and we do not perceive what is certainly true, that no clover plant ever reaches its third year.

As to the red top, by which I understand, the *poa pratensis*, most common English grass of our meadows, our pastures and our lawns, it is unquestionably the best gift of Providence, to pasturing or grazing countries. It is perennial. It has creeping roots. It will come in spite of all your efforts, and if it were not for its natural enemy, the couch grass, it would in ten years overcome all other grasses. It makes admirable hay — the very best of hay for all sorts of cattle. But its defects are, that its crop is light at all times, and as its creeping roots soon fill the ground, the sod becomes bound, and requires breaking up every few years.

I have thus given a true character of all our favorite grasses — not from theory but from 25 years' close experience and observation.

If there were no other grasses than these in existence, or none better, we ought to be thankful for what we have, and endeavor to make the most of them. But is this so? No, it is not so. And we are the only people who make any pretensions to knowledge, who confine themselves to a catalogue or list of grasses so small, and of so doubtful comparative value.

Let us first examine the practice of the first agricultural nation of Europe — the nation which produces the greatest amount of food, for its extent of soil, in all Europe. (We know too little of China to say whether its productions do or do not exceed those of Great Britain.) In laying down a meadow, as they term it, which does not mean as with us, wet land, but mowing land, it is their practice to sow from six to ten different varieties of grass. And this practice is founded on sound philosophy, which means no more than the result of intelligent experience. It is founded on this well known fact, that every species of soil, and more especially rich soils, will give nourishment to many varieties of plants, each acquiring a different species of food, the whole aggregate of whose productions will be much greater than if the same soil was sown with one species of plants only. This will not appear extraordinary to those who have been accustomed to the extensive cultivation of exotic plants — while one class of plants, the Cactus tribe for example, will flourish best in sand, and gravel, and brick dust — another in pure peat — another in pure sand; others require the richest composts, pure humus, or the finest vegetable soil. If you give to the plants which prefer a poor silicious soil, or peat, rich earth, they at once lose their health, and become rotten at the root and perish. This is in exact conformity to that wise, intelligent and beneficent system by which the whole universe is governed. Without entering into the inexplicable laws, which govern the vegetable kingdom, as well

as the animal, we may content ourselves with the *fact;* and the only question with which we need trouble ourselves is, whether the *fact be so or not.* It is certain that the experience of the English farmer has been in favor of this great mixture of seeds; I can only add in favor of this theoretical, if it may be so called, *doctrine*, this *fact*, that in a rich natural meadow, which has never been broken up for fortyfive years, and as I believe, for 200 years, I have counted fifteen species of natural grasses, all flourishing without apparent interference, and none appearing to disturb the growth, or even luxuriance of others.

Having made these preliminary remarks, I shall say something of such grasses as are cultivated in Europe, and of which I have made a fair trial. I beg it to be fully understood, that I speak only of my own experiments, though I shall take notice briefly of the experiments of others, which have come to my knowledge.

The orchard grass, *dactylis glomerata* is one of the grasses frequently sown in Great Britain, though I cannot find that it is used on the continent of Europe. It has been growing into favor in this country, and gradually taking the place of herdsgrass, or timothy. It has been successfully cultivated by my intelligent friend John Prince, Esq. of Roxbury. In consequence of his recommendation, I have tried it for several years past, and am unable to speak of it with such unqualified praise as has been bestowed upon it by others. Its advantages are, that it is a very early grass, affording an early pasturage, and an early crop. It bears repeated cuttings, and affords a great quantity of after feed. Its disadvantages are, that unless its seed is most abundantly sown, it is too apt to come up thin, and to remain in detached bunches; as grass it is eaten greedily but when made into hay, it is not a favorite food for either the horse or cow — at least such has been *my own* experience. I account for this from this fact, which I have never failed to remark; the upper parts of the leaves are apt to turn brown or perish before the flower stalk is fit to cut. From this cause the flavor of the hay is not only not aromatic, but it is to my

senses positively disagreeable. In drying, it loses more in weight than any hay with which I am acquainted.

The tall meadow oat grass, (*avena elatior*), has proved under my cultivation, a most valuable grass, and has fully supported the high character given of it by E. Phinney, Esq. of Charlestown and Lexington. It is a very early, and a very tall grass, yielding a good burden. It will start as frequently and as rapidly after cutting as the orchard grass, and makes a sweeter hay. It has the advantage of being a perennial and enduring grass. On my first experiment, 20 years since, it lasted seven years without the necessity of renewal.

The sainfoin, a favorite grass of France, has never succeeded with me. I have made three trials of it, but in every case it perished the first winter, to such an extent as to render its culture impracticable. I have not heard of its success in any part of the northern states.

The lucerne grass I have now cultivated for eight years last past; having a full conviction that it is superior to the red clover, and that on soils adapted to it, it must and will supersede it almost entirely, except where the clover is intended merely as a preparation for wheat. I shall make some further remarks upon it, giving the results of my last years' experience, which both for their extent and success, far exceeded those of any former year.

My first piece, (four years from the seed), I reserved for soiling. It was cut down four times, and pastured the fifth. The first cutting was on the tenth of May.

The second piece was sown with red top, and was cut and made into hay three times, and depastured on the fourth. There was good feed of a fifth crop on Chirstmas day.

The third piece was sown with tall meadow oat grass, in the proportion of one bushel of oat grass to six pounds of lucerne.

The first crop was very great; it was difficult to decide in this first crop which excelled, the lucerne or the oat-grass. But in every succeeding crop, the lucerne predominated to so great a degree, that it seemed to be the only crop. This was owing

to the greater breadth of its leaves. I never cut it till it flowered. I made 4 crops last summer of excellent hay from it, amounting in all to six tons and a half per acre — and after that it furnished a rich supply of after feed. This crop was seen and admired by a great number of intelligent farmers.

Having been convinced that it was suited to my soil, I last year laid down an acre and a quarter for a pasture, being satisfied that it is admirably adapted for this purpose. I laid it down with barley, but it grew so fast that I was obliged to cut the barley stalks very short, or else I should not have been able to thresh it, so thick and succulent was the lucerne. I cut over this field once, and then depastured it.

I mention this fact as a remarkable one, because the French writers speak of it as a *very rare* occurrence, even in *their* climate, that it will bear the scythe the first year.

At the South and in New York, the lucerne has done as well as with me. Yet many persons have not succeeded with it here. It will not endure wet or black soils. The land in which I have raised it, is a warm soil — the surface good, but thin on a gravelly bottom. It has stood drought better than any other grass. I have always used gypsum, and perhaps owe my success in part to that valuable stimulant. I have employed two bushels to the acre. If my repeated experiments shall result in its successful culture, I shall be happy; and if not, I shall have the consolation of well meant endeavors in a good cause.

Respectfully yours,

J. Lowell.

BONE MANURE FOR WET MEADOWS.

To the Hon. Thomas L. Winthrop, President of the Massachusetts Society for the Promotion of Agriculture.]

Sir — It is well known to all readers of agricultural works that a vast variety of *substances* are used in older countries than ours (for the purpose of increasing the fertility of lands) which have been unknown to us. It is no reflection on our country, because we have not wanted them. The time has now arrived in Massachusetts at least, in which these treasures should not be lost. I beg leave to mention one, not of my own discovery, but to which I have been indebted to the sagacity, and liberal intelligence of my neighbor. A few years since, the Hon. William Ellis of Dedham, recommended to me the use of the head and feet bones of oxen as a highly valuable manure on meadow lands. He said that he had observed in passing that I had grounds remarkably well adapted for this manure. I however neglected his hint, though I constantly kept it in mind, until the last year, when seeing an immense load of the heads of oxen passing by, I inquired of the owner, for what purpose he was carting those materials, and his answer led me to the following facts, viz. That he came down a distance of eight miles with an empty team, and was carrying back a load, which cost him 2 dollars, to put on his meadow land. I found that it was no new experiment with him, and that he came often for this purpose.

Here then I had facts. I knew the habitual economy of our citizens, that they were not remarkably prone to idle experiments, or to wanton expenditure.

I entered with my very intelligent informer into many particulars as to the process and effects, but I own that I was more impressed with the simple fact, that he would devote his team and labor for a day and pay two dollars for his materials besides, than with all his other assertions.

If this man can afford to come 16 miles, and carry back a manure which costs him as much as a load of dung, surely it

must be more valuable to me, who can cart eight loads at the expense of his one.

I made the experiment. Its success surpassed all his descriptions. The manure brought in new grasses. It encouraged and invigorated the old.

I am aware that it is only of limited application, but it is no trifling thing to render useful an article formerly thrown away. We know so little of the philosophy of manures that I shall not speak on that subject. All I shall say is, that there is much animal matter still adhering to the bones, and animal matter has been found by experience to promote the growth of vegetables.

The mode of application is to break them up with a sledge, or with the back of an axe, and then to press them below the surface by a rammer or beetle. The *only* point to which I offer *my* testimony is, that the *effects are much greater* than an *equal quantity* of horse and cow-dung. This may be relied upon.

Very respectfully yours,

J. Lowell.

GRAFTING THE GRAPE.

Much has been said in the Southern Journals about a recent discovery as to grafting the vine. It has been announced in such terms, as would lead ignorant persons to suppose, that to that person alone was the merit due.

I am induced to make great allowance for the habitual grandiloquence of our southern friends. They are very prone to use high *sounding* words. But in fact, horticulture was an advanced art in the North when it was unknown in the South, and but imperfectly so in the Middle States. It is equally true now. Massachusetts is far before New York and Pennsylvania in Horticulture, if you take into view the improved state of private gardens, the number of its green and grape houses, and the beauty of its country seats. There do not exist in the whole range of the United States more finely cultivated or highly

ornamented country residences than this ancient state can show.

But to the point of the grafting the grape. My excellent friend, the late Ebenezer Preble 20 years since grafted the vine with as much care as he grafted other plants, without grafting into the root. I have done it often, but with not so entire success. No doubt the grafting the root is more sure, but it does not apply to the grafting in vineries. There you need the skill which Mr Preble and the French gardeners possessed of grafting in the limbs. A CULTIVATOR.

ROXBURY.

MILCH COWS.

The attention of farmers is invited to the consideration of the character and condition of our milch cows.

How much milk ought a cow to yield to be worth her keeping? What is the average time that our cows are in milk? Is there much, if any, waste of fodder among us by keeping animals that yield little or no return of profit? Questions like these, and there are many such, ought to be put and answered in the New England Farmer. It may turn out that our dairy stock is extremely low in character and its management wasteful.

If something like an average quality of milch cows could be settled — to afford a standard — and it should be understood that no good farmer would keep an animal for milk that fell below it; all the cows in the country would soon come up to that standard and go beyond it.

A milch cow, of *medium quality*, in this State, will give, it is supposed, 12 quarts of milk per day for 2 months after calving, and about 7 quarts per day on grass feed for the next four months, and 4 quarts per day for the next following 2 months, and perhaps 2 quarts one month longer. Altogether 1500 quarts in a year.

It takes 9 quarts of milk to give a pound of butter, and 4 quarts to yield a pound of cheese. The skim milk and dairy *whey* may be valued at $3 a cow per annum.

Now, a cow that gives 1500 quarts of milk in a year will produce 166 lbs. of butter, worth at 16 cents per lb. $26 56
Skim milk, say 3 44

30 00

Or 1500 quarts of milk will give, at 4 quarts to the pound of cheese, 375 lbs. which at 8 cents per lb. will be $30 00
Whey, say 3 00

33 00

Nothing is said of the worth of the calf, as all the milk the cow gives is credited. A milch cow's keeping one year cannot be short of 25 dollars in the interior.

Suppose a farmer to resolve that he would keep no cow that did not hold out as a good milker 9 months in the year — and that did not give sixteen quarts of milk per day for 2 months after calving, and 12 quarts per day the next four months — and six quarts per day the next 3 months, and 2 quarts per day the month following. — Such a cow would yield per annum 3000 quarts of milk.

Here it may be remarked, that with the addition of 5 dollars per annum to the cost of food as estimated for a common cow, the neat profit would probably be four fold.

Is it not practicable to have throughout the country, as common dairy stock animals as good as the last described?

This question is submitted to farmers for consideration. The probability is, that in taking some pains to get stock as good, they would get even better.

If the various modes of obtaining this object were resorted to at once and with zeal throughout the country, there would be a prodigious improvement, in a very short time. — No young animal of promising appearance for milk would go to the butcher. — More care would be taken of young stock. — More young stock would be retained to insure a better selection for milch cows. — Farmers would think more of the advantages of em-

ploying bulls of the improved breeds. — Heifers would be milked with great care and very thoroughly to get them into the habit of holding out long as milkers. If they once dry early, no care and keeping afterwards will correct this fault. — Heifers with the first calf will be fed well and with some additional care the last 3 months they are in milk, to make them hold out.

The profit of a milch cow is not generally understood. Milk is not only the most nutritious but the cheapest article of food. The food necessary for a cow in full milk, does not exceed in price, one third of what is necessary in feeding for the butcher.

These few remarks are hastily made to draw out our farmers, and particularly scientific farmers, on this subject. There is a great deal to be said upon it, and a great many facts to the purpose, which should come to light.

PREMIUM LIST OF THE MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE, FOR 1831.

In the period of 14 years, since the first Cattle Show at Brighton, several thousand dollars have been distributed in premiums to encourage improvement in the farming stock, — not without some success. It is believed that farmers generally, are convinced of the benefit of attention to the rules recommended by scientific men, in the selection of their stocks. The Shows of the county societies have already contributed greatly, and will continue to do much, to awaken attention to the advantage of raising prime cattle for labor, and for the dairy, and to secure a preference of the improved breeds of sheep and swine. And if there be any who still permit ordinary animals to consume the produce of their farms, there may be found examples enough in their neighborhood, of such as profit by a better husbandry, to convince them, ere long, of their error.

A state of things so favorable will justify the Trustees of the Massachusetts Agricultural Society in appropriating the money at their disposal, for premiums, the coming season, to some other objects. They will therefore intermit the Brighton Cattle Show for one year.

The general management of farms — the operations of the dairy — and a thorough field culture for vegetables and grain crops, will engage their attention, as leading objects ; and their largest premiums will be appropriated the ensuing season to encourage and reward distinguished merit in these particulars.

Butter and cheese are among the staples of New England, and it is obvious, that a small improvement in their quality will add a large sum of money to the income of this district of country. And there is every reason to hope, that a judicious encouragement by premiums, will, in a few years, give a character to our dairies, not surpassed by any part of the world. To accomplish this more surely, it may be of use to admit, for a time, a competition for our premiums, for butter and cheese, from beyond the limits of the state, and without any restriction as to their origin ; that, if practicable, we may have specimens to compare with our own, even from other countries. We may thus have an opportunity of attaining to a greater certainty the degree of excellence of which these important articles of food are susceptible, and, by the comparison, learn the imperfection of our own processes of manufacture — and perhaps we may have the satisfaction to find that, to some extent at least, both butter and cheese, are now made in Massachusetts, not inferior to the best in other countries.

Some premiums offered in past years for the encouragement of plantations of forest trees, live hedges, and apple orchards, and for useful experiments, and valuable inventions, will be continued.

In conformity with the views above expressed, the Trustees of the Massachusetts Society for Promoting Agriculture, propose

to have an Exhibition of Butter and Cheese, in Quincy Hall, in the new Market House, Boston, on Wednesday, the ~~eighth~~ 7 day of December, 1831.

And they offer the following premiums, to be awarded by a committee of competent judges, selected by the Board, to the proprietors of the best lots of Butter and Cheese exhibited, without regard to the place of manufacture.

For the best lot, in tubs, pots, or firkins, not less than 300 lbs. $100 00

For the next best, not less than 300 lbs. 50 00

For the best, less than 300 lbs. and not less than 100 lbs. 30 00

For the next best, less than 300 lbs. and not less than 50 lbs. 20 00

For the best, less than 100 lbs. and not less than 50 lbs. 15 00

For the next best less than 100 lbs. and not less than 50 lbs. 10 00

For the best lot of Cheese, not less than one year old, and not less in quantity than 300 lbs. . 100 00

For the next best, not less than one year old, and not less in quantity than 300 lbs. . . . 50 00

For the best Cheese, less than one year old, and not less in quantity than 300 lbs. . . . 50 00

For the next best, of not less quantity . 30 00

VEGETABLE AND GRAIN CROPS.

For the greatest quantity of Carrots on an acre, not less than 600 bushels 20 00

For the greatest quantity of ditto on half an acre, not less than 300 bushels 10 00

For the greatest quantity of Potatoes on an acre, not less than 500 bushels 20 00

For the greatest quantity of ditto on half an acre, not less than 250 bushels . . . 10 00

For the greatest quantity of common Beets on an acre, not less than 600 bushels . . . $20 00

For the greatest quantity of ditto on half an acre, not less than 300 bushels 10 00

For the greatest quantity of *Mangel Wurtzel*, or Scarcity Root, on an acre, not less than 600 bushels 20 00

For the greatest quantity of ditto on half an acre, not less than 300 bushels 10 00

For the greatest quantity of Sugar Beets on an acre, not less than 600 bushels 20 00

For the greatest quantity of ditto on half an acre, not less than 300 bushels 10 00

For the greatest quantity of Parsnips on an acre, not less than 400 bushels 20 00

For the greatest quantity of ditto on half an acre, not less than 200 bushels 10 00

For the greatest quantity of Ruta Baga on an acre, not less than 600 bushels. 20 00

For the greatest quantity of ditto on half an acre, not less than 300 bushels. 10 00

For the greatest quantity of common Turnips on an acre, not less than 600 bushels . . . 20 00

For the greatest quantity of ditto on half an acre, not less than 300 bushels. 10 00

For the greatest quantity of Onions on an acre, not less than 600 bushels . . . 20 00

For the greatest quantity of ditto on half an acre, not less than 300 bushels 10 00

For the greatest quantity of Cabbages on an acre, not less than 25 tons weight, free from earth when weighed 20 00

For the greatest quantity of ditto on half an acre, not less than 13 tons . . . 10 00

For the greatest quantity of Vegetables (Grain, Peas, Beans, excepted) for home consumption and not for sale — raised for the keeping of stock, regard being

had to the size of the farm in proportion to the crop, and to the number of the stock kept, — and also to the respective value of the vegetables as food, and the expense of raising the same . . $30 00

For the greatest quantity of Indian Corn on an acre, not less than 100 bushel . . . 20 00

For the greatest quantity of Winter Wheat on an acre, not less than 30 bushels . . 20 00

For the greatest quantity of Barley on an acre, not less than 45 bushels 20 00

For the greatest quantity of Rye on an acre, not less than 30 bushels . . . 20 00

For the greatest quantity of Millet on an acre, cut and cured for hay, not less than 3 tons; the claimant giving evidence of the time of sowing, the quantity of seed sown, and the quantity of hay produced . 20 00

For the greatest quantity of dry Peas on an acre, not less than 30 bushels . . . 20 00

For the greatest quantity of dry Beans on an acre, not less than 30 bushels 20 00

For the greatest quantity of Mustard Seed, not less than 20 bushels 20 00

For the greatest quantity of dressed Flax, not less than 500 lbs. from an acre . . . 20 00

For the greatest quantity and best quality of Hemp, on an acre 40 00

It is to be understood that the quantity of land specified above is, in each case, to be in one piece. And the claimant of any of the above premiums shall, with one other person, make oath to the following particulars before some Justice of the Peace, and with a certificate of the same, shall obtain a certificate of the measurement of the land by some sworn surveyor.

The particulars are —

1. The condition of the land in the spring of 1831.

2. The product, and general state of cultivation and quality of manure used upon it the preceding year.

3. The quantity of manure the present season.

4. The quantity of seed used, and if potatoes, the sort.

5. The time and manner of sowing, weeding, and harvesting the crop, and the amount of the product ascertained by actual measurement, after the whole produce for which a premium is claimed, is harvested, and the entire expense of cultivation.

6. Of Indian corn — the entire crop of the acre offered for premium, if shelled, to be measured between the 15th of November, and the 1st of December. If not shelled, the whole to be weighed within the same dates, and 75 pounds of corn and cob, is to be considered as equivalent to one bushel of shelled corn.

7. At least 40 bushels of the vegetables, for which a premium is claimed (except potatoes, onions, and common turnips,) are to be weighed, and 56 pounds, from the dirt, will be considered as a bushel.

THE BEST CULTIVATED FARMS.

For the best cultivated Farm . . . $100 00
For the next best cultivated Farm . . 75 00

The farm to consist of not less than 70 acres, exclusive of woodland. The owner or tenant, to entitle himself to either of the premiums, must state in writing the nature and quality of the soil; the proportions suitable for tillage, mowing, and pasturing, respectively, and especially the quantity of irrigated meadow or low land which is never tilled or ploughed.

The number of acres planted the present year with corn, potatoes, and other vegetables.

The number sowed with winter and spring grains, and other vegetables, specifying the several kinds, and the number of acres planted or sown with each.

The quantity and kind of manure used for each crop, and the times and manner of applying it.

The quantity and quality of each crop.

The number of acres mowed the present year, specifying the proportion of irrigated meadow, or low land, and the proportion which had been ploughed or tilled, and the kind of grass and quantity of hay on each.

Manner of irrigating the lands, and dressing and manuring meadow or low land, and irrigated upland, if any, and laying down tilled land to grass.

The kinds of grass seed sown, the quantity of each, the time of year, and whether sown with oats, barley, or other grain, or alone.

The number of acres of pasture; the part, if any, that had previously been ploughed; when this part was laid down, and the kinds and quantities of grass seed sown per acre.

The number of apple trees on the farm; the proportion grafted; whether planted in orchards or partly by the fences against the road; the quantity of winter apples gathered and cider made; treatment of trees, and manner of making cider.

The form and dimensions of barns, sheds, and barnyard, and manner of collecting and making manure.

The number of oxen, cows, and young stock, horses, and sheep, kept on the farm through the year, and the quantity of butter and cheese made, distinguishing the new milk from the other cheese, and the breed of cows, whether foreign, mixed, or native.

The number of swine and quantity of pork made.

The labor employed in carrying on the farm, and quantity of ardent spirits consumed.

As it is deemed important to ascertain the best rotation of crops, it is expected that the applicants for these premiums will state the kind of crop, if not able to state the quantity, raised on the several and respective pieces of tillage, mowing, and pasture land described in their statements, for two years next preceding the present one.

The manner of feeding his stock in the winter season; whether he gives his milch cows or oxen grain or roots of any kind, and the kind and quantity.

His treatment of calves he intends to raise; whether he lets them continue to suck, or weans them soon after born — how soon — what food he gives them, and how long he continues to feed them.

His manner of making cider and cleansing his old barrels, and the time he draws it off, if at all.

The kind of food given to his swine and the manner in which it is prepared.

The age at which he finds it most profitable to make beef of his working oxen and good milch cows.

If it be a sheep farm, the manner he treats his sheep in the winter; whether they are housed or left out in the yard, the food given them, and the time they generally lamb.

The whole statement to be sworn to by the applicant. The Trustees to be at liberty, in all cases, before they award the premium, to visit by a committee, or such other persons as they shall appoint, the farms of the applicants, if they deem it expedient.

N. B. Claims to be addressed to Benjamin Guild, Esq. in Boston, (post paid) before the first day of October next.

EXPERIMENTS, DISCOVERIES, AND INVENTIONS.

For the experiment of turning in Green Crops as a manure, on a tract, not less than one acre, and proving its utility, giving a particular account in writing under oath of the process and the result . . . $20 00

For the most successful use of the Drill Plough, in the cultivation of any small grains or seeds, on a scale of not less than one acre 20 00

For an effectual and satisfactory mode of destroying the Bee-moth or of preventing its ravages . . 20 00

For an effectual and satisfactory mode of extirpating the Worm that attacks the Locust tree . 100 00

For a new, effectual, and satisfactory mode of extirpating the Borer which attacks the apple tree . 50 00

For any newly invented Agricultural Implement, or Machine, superior to any designed for the same use, that shall have heretofore gained a premium, a reward not exceeding twenty dollars, according to the importance of the invention $20 00

TREES AND LIVE HEDGES.

For the largest plantation of the White Mulberry tree, not less than two thousand plants, nor less than *three* years old, to be claimed on or before the 1st of December, 1832 . . . . . 50 00

For the greatest quantity of raw or unmanufactured Silk, not less than *ten* pounds, raised by the claimant, and presented before the 1st December, 1832 20 00

For the best plantation of White Oak trees, not less than one acre, nor fewer than 1000 trees per acre — raised from the acorn — not less than *three* years old, and which shall be in the most thriving state on the 1st September, 1832 . . . . . 100 00

For the best plantation of White Ash, Larch, or Yellow Locust trees, each of not less than one acre, nor fewer than 1000 trees per acre, to be raised from the seeds, and which trees not less than three years old, shall be in the most flourishing state on the 1st September, 1832 . . . . . 50 00

For the best Live Hedge, made either of white or Cockspur Thorn, planted after 1820, not less than one hundred rods, and which shall be in the most thriving state in 1831 . . . . . 50 00

For the best Buckthorn Hedge, not less than 100 rods, and which shall be in the most thriving state in 1831 . . . . . 50 00

For the best Apple Orchard planted since 1822, not less than 100 trees, and which has been managed, in all respects, with care and skill, and shall be in the most thriving condition in the season of 1831 50 00

Claims for the premiums on vegetable and grain crops, and experiments and inventions, together with the evidences required, are to be in writing, and sent free of expense, to Benjamin Guild, Esq., in Boston, Assistant Recording Secretary, on or before the 1st day of December next, and they will be examined by the committee, previous to the 6th day of December, on which day the premiums will be announced at Quincy Hall.

Competitors for the Butter and Cheese premiums will please to take notice, that there will be a public auction after the examination by the committee. There will be no charge for auctioneer's fees, but the government duty must be paid by the owners of the butter and cheese. The committee will be at liberty to withhold from the auction sale, any parcels, either of butter or cheese, which they may have reason to suppose, from the ordinary quality of the same, or other circumstances, may have been sent to the hall, *merely for sale.*

Claims for the premiums on Butter and Cheese must be made in writing, addressed to Benjamin Guild, Esq., Boston, post paid, on or before the 1st day of December, 1831. And the parcels deposited before Tuesday the 6th, at Quincy Hall, on which day, at 10 o'clock, A. M. the committee will examine the lots offered for premium, and none will be admitted after that hour.

Each lot must be marked with the initials of the owner's name, and the place of manufacture.

It is particularly recommended to the competitors, that the butter be put up in the nicest manner.

Agricultural Implements of new invention, intended for exhibition, must be sent to the Hall on or before Tuesday the 6th December.

R. Sullivan,
E. H. Derby,
John Heard, Jr.
Gorham Parsons,
} *Committee.*

Boston, Jan. 1831.

MASSACHUSETTS

AGRICULTURAL JOURNAL.

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INTRODUCTORY REMARKS.

The Trustees of the Massachusetts Society for promoting Agriculture owe, perhaps, some explanation to the public for the suspension of the publication, which they have, for more than thirty years past been in the practice of publishing, as well as for their resuming it upon this occasion. When they commenced their publications in 1792, there had been no attempt, in this country, or in Europe, with the exception of the Bath and West of England Journal, and one or two others, to enlarge the boundaries of agricultural information through the press. If improvements, or discoveries were made, either in the tools or implements of agriculture, in the mode of tillage, in the rotation of crops, in the introduction of new plants, or in the economy of manures, they were left to make their way into the world, as all improvements had done before the discovery of the art of printing, from neighbour to neighbour. A county of Great Britain might be, and often was in possession of an improved mode of tillage, or of dairy management, half a century before it was known or adopted in any other county, at not one hundred miles distance. This truth is fully established by the surveys of Marshall, and Young. Thus particular spots were famous for their butter or their cheese; others for their fine breed of cattle for the butcher; others for their wise rotation of crops; others for their extensive use of lime and marl; while, in other portions of the

country, these improvements were absolutely unknown. The same remark was applicable to this country ; and when the first attempts were made to treat the subject of agriculture as one to be taught by means of the press, they were received with great coldness; the publications were seldom purchased, nor could they have obtained a circulation, but for the aid of the legislature, who, paying for the expense of printing, received in return a distribution of the numbers as they appeared. There seemed to have been a general opinion that agriculture could not be *improved*, though it might be *injured*, by books; that there was something peculiar in its processes, which could only be communicable by tradition; that every farmer was born to be an adept in his art, though that art involves, in its operations, principles as extensive and as difficult to comprehend as any human employment whatever. This feeling or prejudice is not yet eradicated,—it is only shaken ; and many a self-taught farmer sneers, with contempt, at any attempt to show that he does not manage his land, or his cattle, in the best possible way.

The Trustees of this society persevered, however, in collecting such facts, and elucidating such principles in relation to every branch of agriculture and of horticulture, as they thought might serve to promote its improvement, in spite of all these discouragements. They did not admit the anomalous and absurd opinion, that agriculture had arrived at its highest state of improvement. They could not believe, that while the arts of navigation and of manufactures were making a progress in half a century greater than they had made in ten preceding centuries, the agricultural art alone had arrived at its maximum—its highest degree of merit. They looked to the state of European culture, and they found it very far advanced above our own. They found, that the rent of cultivated lands was often far great r than the price of the soil itself in this country. Although much of this difference might be attributed to the dense population of those countries, and the greater demand for the products of agricultural industry, still there remained much

unexplained in the superior produce of European farms, when compared with our own. It was well known, that farmers in England could take a farm of 500 acres at 2500 dollars rent, and pay taxes and tithes to an amount equal to that rent, and yet grow rich.

To be sure, capital was more abundant and obtained at a low rate of interest, and labour was 50 per cent. cheaper; but still these causes would not sufficiently account for the fact, that new and fertile lands in this country, whose first cost did not exceed the rent and taxes paid annually by the British farmer, should not yield any profit over and above the labour bestowed upon them. In the inquiry as to these singular results, it was at once perceived, that the extraordinary products of British farming industry could be traced distinctly to improved implements of husbandry—to improved modes of tillage—to the adoption of regular and systematic rotation of crops—to increased attention and care in the improvement of every variety of the breeds of domestic animals—to the introduction of new plants for the support of these animals—to the improvement of the qualities and kinds of their fruit trees. Impressed with the opinion, that the introduction of these improvements into our country would be of inestimable value, the Trustees of this Society persevered for 20 years in stating, in their publications, such improvements as the British journals of agriculture afforded them the means of furnishing to the public. They are not disposed to magnify the effect of their efforts. If they were not as great as their wishes anticipated, and as their laborious exertions authorized them to expect, may we not be permitted to say, that one cause of their limited success was, that they sowed their seed on stony and ill prepared ground. Could it reasonably be expected, that farmers with small capitals, and often in debt, without preparatory education, a race of men, proverbially cool and cautious, and very properly so, would be as prompt to admit, and to act upon, a new system of agriculture as a manufacturer, who, with greater natural skill, and much more enterprize, has been able, in a short period of twenty

years, to rival, and in some respects surpass the ablest artizans of Europe? No. It was not to be expected—nay more, it was never expected. The history of agriculture forbad any such hope. Go back for 2000 years, and you find that Virgil and Columela were in possession of most of the facts and principles which are known and acted upon at this day in the art of agriculture. It is an art, which has been more stationary than any other; and this is principally owing to the nature of the employment itself. It offers no sudden and great reward, like those resulting from opening new sources of commerce—and still less like those which are produced by new inventions in manufactures.

The discovery and application of the Steam-Engine, by Watt, effected a greater change in the profits of the manufacturing class, than could by any possibility be produced by any discovery whatever in the art of agriculture. There are, therefore, in the science of agriculture none of those splendid and attractive allurements, which call forth the highest faculties of the human intellect. And when from age to age a new thought has been struck out in agriculture, as it does not lead at once to sudden wealth, as the experiment must be slow in its operation, often failing from negligence, or the variation of seasons, and more especially as the class of men, who are invited to adopt a new discovery, are from their situation indisposed to take great risks in order to test the soundness of new propositions, the progress of agriculture must necessarily be very slow. Those who would wish to instruct, and improve our agriculture, must, of course, be content with a distant and remote fruit of their exertions. They must do more; they must fortify their minds against many captious objections—many declarations of even intelligent men, that their projects have failed. It is, indeed, often a very severe trial of patience. We find that some men's minds are so constituted, that they derive a great and unfeigned (I have no doubt) pleasure in holding up to ridicule a new project in agriculture; forgetting that though it may be true, that one or more propositions of

improvement may fail of being as useful as the projectors imagined, yet that this has been the fate of every other art and science. Indeed it seems to be the law, or rule of all human inventions and improvements, instead of being an exception in the case of agriculture, that all first attempts shall be imperfect. The Steam-Engine, Whitney's Cotton Gin, and a thousand other discoveries, show that time is necessary to give to them their fullest developement. We are not entitled to expect such splendid discoveries in agriculture. It is not, in its very nature, susceptible of it. But have not our publications, feeble as they are, imperfect as we feel that they have been, produced much good? This is a question upon which, we are sensible, many persons will differ. Yet may we ask, upon what rational ground can those who doubt the utility of the discussions on agricultural subjects repose their objections? Is it useful to give to the mechanic and agricultural classes, lectures on the principles of their respective arts, by means of Lyceums, by oral discourses, which are soon forgotten—and can it be useless to place before them the improvements of Europe in the important science of agriculture? No. The spirit of the age has settled this question. It has decided, that there is no danger on the score of the excess of knowledge, but from the defect of it.

Let us refer to facts. Compare the state of agriculture in this country in 1792 with its present condition. Look at the returns made to the Massachusetts Agricultural Society, forty years since, in reply to the questions which they circulated throughout this State, and the numerous reports made to the same society within the last five years. A fair comparison will convince any man that agriculture has made nearly as rapid improvements as any other branch of domestic industry. Will it be denied, that these improvements have been due in some considerable proportion to the suggestions and information conveyed to the public through the publications of this society? Have not many valuable roots and grasses been introduced into notice by means of the press, which would probably

have been either unknown, or confined to a very limited circle? How much has horticulture been advanced, and especially fruits, by the rapid dissemination of intelligence? Take one example—when, in 1823, Mr. Knight sent his first present of new pears, the letter and list which accompanied it were published in the Massachusetts Agricultural Repository. Within twelve months, applications were made for these fruits, and scions were actually distributed from the lower part of Maine to Cincinnati in Ohio. If there had been no publication devoted to agriculture, it would have been possible that fifty years might have elapsed before these fruits would have reached the State of Ohio. But even if the positive direct benefit resulting from Agricultural publications could not be established, few persons will be disposed to question their salutary effects in arousing the curiosity, and exciting the intellectual powers of the agricultural population. A most remarkable change has been apparent in this respect.—While it was very difficult to procure communications to fill up two semi-annual journals, ten years since—three or four agricultural newspapers, with extensive subscriptions and circulation, are at this moment fully supplied with original matter; and what is most encouraging, far the greater mass of articles are from the pens of real cultivators.

It was owing to the rapidly increasing circulation and growing value of these newspapers, that the Trustees of the Massachusetts Agricultural Society have been induced to suspend, for some time past, their publications. The newspapers seemed to them to supersede the necessity of their exertions, while their publications might seem in some degree to check the subscriptions and circulation of these more useful means of instruction. The Trustees were, however, induced to issue the present number, because the length of the reports of their committees, and the importance of that upon farms particularly, seemed to require this change. They could hardly expect that the New England Farmer should devote so much of its columns to the reports of any single society; and it moreover seemed to the Trustees to be expedient, that their reports

should be presented in such a form, as that those, who might wish to preserve them, might add them to the former volumes of their Journal.

The Trustees of the Massachusetts Society for promoting Agriculture deem it proper to explain the reasons, which induced them to suspend their cattle shows the last year, and the resolution to resume it the present season. The success which had attended the cattle shows and ploughing matches in Great Britain, the ardour and activity which they seem to have excited in that kingdom, were sufficient motives for the introduction of them in this country. It was admitted in Great Britain, that these shows had materially assisted in the improvement of their breeds of cattle. The ploughing matches, it was also thought, had tended to the amelioration of the implements of agriculture. In this state of our information, the Berkshire Agricultural Society introduced the practice of public cattle shows in Massachusetts. To their example, we feel ourselves bound to state, we were chiefly indebted for the trial, which we made on this plan. The European practice and success was familiar to us, before the Berkshire society made the first American experiment on the subject. Their success seemed to afford strong hopes, that the agricultural population might be excited, as easily as the mercantile and manufacturing classes, to competition, to strenuous exertion, to rivalship. With these examples before them, the Massachusetts Agricultural Society instituted a regular series of cattle shows, and ploughing matches.

The success of these shows far exceeded the hopes of their promoters. All classes of farmers were aroused, and induced to produce their best animals, for premium and exhibition, and the ploughing matches brought forward the most skilful and correct, and careful, and judicious practical farmers. Shall we be thought to be extravagant, if we should state that the following effects resulted as an almost inevitable consequence of these public exhibitions?

They gave, at once, to the agricultural classes, a sense of their importance, and of the interest which the public felt in

their success. For two hundred years, they had been neglected as below the notice, or beyond the sphere of the more active members of society. The Legislature had cherished, by acts of incorporation, by special privileges, every other branch of industry; but the farmer was overlooked as either below, or above, or beyond their notice.

The first trial, and all subsequent trials of the capability of the farmers, of improvement, and of spirit, energy, and rivalship in their art, fully proved that they were as susceptible of the effects of encouragement, and of public countenance, as any other classes of society whatever.

These exhibitions further proved, that the foreign animals of improved races received the marked attention of all the visitors of the shows, notwithstanding all the previous national prejudices on this subject. It did not depend in any degree upon the opinions of the committees appointed to award the premiums; but the question was settled by public opinion, by the affluence of crowds, who surrounded the imported and improved animals. There must have been some marked distinction, which could thus draw the public attention to any particular animal.

It is not our purpose, in this short notice, to enter into the question whether the introduction of these improved races is or is not a public benefit. We shall be ready to enter into this question when we shall hear, that every merino sheep has been slaughtered, and every owner of a half-breed improved short-horned animal has discarded him.

We do most fearlessly claim the merit of having first encouraged the introduction of these animals, and of their extension through the country.

But, having set the example, encouraged the farmers by these exhibitions, and seeing societies established throughout the State, we doubted, whether any future exhibitions at Brighton would any longer be of use. The fatigue, trouble, and expense to the Trustees, and the diminution of their funds, would of course lead them to discontinue them, as soon as any doubts were suggested as to their utility. Such doubts met them from

many sources, and they suspended them. In obedience to these suggestions, and in the hope that the suspension of their publick shows would have the tendency to increase the exhibitions of other county societies, which had sprung up in every part of the State, they offered no premiums for the last year. The inhabitants of *Brighton particularly* felt this suspension to be an injury to them. They had made great personal sacrifices to promote the cattle shows. The inhabitants of the County of Norfolk were also deprived of the benefits of competition. They could neither afford to go to Concord, Worcester, nor Taunton. But this was not the worst effect of the suspension. Instead of aiding the other societies, and increasing the interest in their shows, it is alleged and believed, that the suspension of the Brighton Cattle Show has, in fact, checked the zeal of the farmers, and raisers of cattle. It is believed, that the show at Worcester, the most favorably situated of any in the State, was rather injured than promoted by the suspension, last year, of the Cattle Show at Brighton. It does not appear to the Trustees of the Central Society extraordinary, that such an effect should have been produced. The great market for cattle raised in Massachusetts is and will probably forever be that of Boston. The mart or place of sale for this market has been for fifty years the town of Brighton. It is useless to explain the causes of this preference: it is sufficient to say that, like Smithfield in London, it has acquired this preference. It is central—equally convenient to the graziers, and to the *numerous packers* of beef and pork, and market butchers of the great market-providing towns in Middlesex and Norfolk. As the fatted cattle and sheep, as well as the store or lean cattle must come there for a market, it is more convenient to them to attend a cattle show in that place than in any interior county. Show Cattle—extraordinary animals, will be offered in greater numbers at Worcester and Concord, if their owners have the additional motive and inducement of being able to offer the same animals at Brighton. The expense is not thereby increased, but the chances of success; and the re-

wards are vastly enhanced. These are the motives for resuming the Cattle Show at Brighton, suspended for one year in order to see the effect of such suspension. The great sums recently expended in Brighton, to accommodate the graziers and the visiters of the cattle shows, furnish a further and sufficient motive for this apparently hasty change in the measures of the Trustees.

LIST OF OFFICERS

OF THE

MASSACHUSETTSSOCIETY FOR PROMOTING AGRICULTURE,

Elected June, 1831.

His Honor Thomas L. Winthrop, *President*,
Hon. Peter C. Brooks, *First Vice President.*
Hon. John Welles, *Second Vice President.*
Hon. Richard Sullivan, *Cor. Secretary.*
John Heard, Jr. Esq. *Treasurer.*
Gorham Parsons, Esq. *Recording Secretary.*
Benjamin Guild, Esq. *Assistant Secretary.*

Trustees.

John Lowell, Esq.
E. Hersey Derby, Esq.
S. G. Perkins, Esq.
Hon. William Prescott,
Israel Thorndike, Jr. Esq.
Hon. John C. Gray.

OFFICIAL REPORTS

OF THE COMMITTEES OF THE

MASSACHUSETTS AGRICULTURAL SOCIETY,

AS ANNOUNCED DEC. 7, 1831.

EXHIBITION OF BUTTER AND CHEESE.

The Committee on Butter and Cheese, consisting of E. Hersy Derby, Gorham Parsons, Esq s. (assisted by Hon. Peter C. Brooks, in the place of Benjamin Guild, Esq. prevented, by sickness, from attending), report as follows :

That they are highly gratified with this year's exhibition.—in both articles it greatly exceeded that of the last. For Butter there were the following entries, viz.—

No.	*By whom entered.*	*Where made.*	*Wt.*	*Price per lb.*	*Remarks.*
1	Sanford Howard,	Hallowell, Me.	310	17 to 20	6 firkins.
3	Jude Kimball,	Lyndon, Vt.		18 to 19	10 do.
2	Robert Gilson,	Ryegate, Vt.	1400	16 to 17	10 do.
4	Thomas Sparhawk,	Walpole, N. H.	350		7 do.
5	Ichabod Everett,	Billerica, Mass.	131		3 do.
6	Alexander M'Kee,	" "			
7	Henry Sprague,	Boylston Farm,			
8	" "	Princeton, Mass.	1200	25 to 25	20 do.—Took 2d premium, $50.
9	Ziba Johnson,	Peacham, Vt.			
10	Wm. Warden, Jr.	Barnet, Vt.		16	7 do
11	Wm. Bachop,	" "	2000	18 to 20	40 do.
12	Wm. Shearer,	" "		17	7 do.
13	Jacob Wilson,	Spencer, Mass.	100		2 tubs.
14	Calvin French,	Needham, Mass.			
15	Wm. Eager,	Northborough, Mass.	620	17 to 20	10 firkins.
16	Jacob Osgood,	Andover, Mass.			
17	Moses R. Bouve,	Barnet, Vt.		16 to 16½	11 do.
18	Silas Bemis,	Barre, Mass.	310		7 do.
19	Lydia Page,	Hardwick, Mass.	335		3 do.—Took 6th premium, $10.
20	Sampson Pierce,	New Braintree, Mass.			2 do.
21	Richard Hildreth,	Sterling, Mass.			2 tubs.
22	Seth Davenport,	Mendon, Mass.	325		7 firkins.—Took 3d premium, $30.
23	Luther Chamberlain,	Westborough, Mass.	553	32 to 37	7 do.—Took 1st premium, $100.
24	Charles Lee,	Barre, Mass.	400	23	7 kegs.
25	John Prince,	Merino Island, N. H.	316		7 firkins.
26	Mary Noyes,	Byefield, Mass.	150		
27	Peter Thacher,	Attleborough, Mass.			2 pots.
28	Walter Bigelow,	Worcester, Mass.	310	20 to 21	6 firkins.
29	Mary Clark,	Northampton, Mass.			
30	Jonathan Wa te,	Whately, Mass.			
31	B. & T. Lynde,	Guilford, Vt.	550		7 kegs.
32	Charles Cutter,	Weston, Mass.	131		4 pots and 2 boxes.
33	William Spring,	" "	106		5 pots and 1 box.
34	Fitch Winchester,	Southborough, Mass.	368		8 kegs.
35	Cloud Harvey,	Barnet, Vt.	600	20 to 22	26 firkins.
36	William Gilkerson,	" "	800		5 do.

37	Samuel Sawyer, 2d,	Sterling, Mass.	108		4 kegs.—Took 4th premium, $20.
38	Oliver Sampson,	Weston, Mass.	800		2 tubs.
39	John Gilkerson,	Barnet, Vt.	500		5 firkins.
40	Nahum Hardy,	Waltham, Mass	70		2 do.
41	Thomas Watts,	Peacham, Vt.		15¾ to 16½	7 do.
42	Alanson Stevenson,[1]	" "		15	7 do.
43	Calvin French,	Boston,			
44	Nathan Cushing,	Woodstock, Vt.	216	22	3 tubs.
45	Gershom Cobb,	" "	272	26 to 28	8 firkins.
46	Stephen Metcalf,	Croydon, N. H.	400		6 do.
47	Gabriel Parker,	Southborough, Mass.	450		4 do.—Took 5th premium, $15.
48	Peter Harwood,	Hardwick, Mass.	312		6 do.
49	Abijah Fisher,	Dedham, Mass.	125	25	5 pots and 1 box.
50	Oliver Johnson,	Sterling, Mass.	68		
51	Jonathan Dudley,	Charlton, Mass.	450		6 firkins.
52	Levi Woodward,	Dresden, Me.	260		5 do.
53	Gershom Cobb,	Pembroke, Mass.			
54	A. J. Allen,	Boston,	100		3 kegs.

In addition to which there were a great many applications from individuals, who, not having complied with the regulations of the Society, could not be allowed to come in competition for the premiums.

For Cheese there were the following entries, viz.—1 from Maine, 1 from New Hampshire, 2 from Vermont, and 14 from Massachusetts.

ENTRIES OF CHEESE.

55	Henry Sprague,	Boylston Farm, Princeton, Mass.	527	8	New.
56	Jude Kimball,	Lyndon, Vt.		8½	New.
57	Jacob Wilson,	Spencer, Mass.		7½ to 9½	Old.
58	Samuel S. Woods,	New Braintree, Mass.	347	8¾ to 11 O. 8¾ to 9½ N.	
59	Elisha Matthews,	" "			Old and new.—Took 2d premium on old, $50.
60	Welcome Newell,	" "			
61	Daniel Hunter,	" "			
62	Ebenezer Tidd,	" "			Old.—Took 1st premium on old, $100.
63	Roswell Converse,	" "			New.—Took 1st premium on new, $50.
64	William Tufts,	" "			
65	Job Rainger,	" "			
66	Sampson Pierce,	" "			
67	B. & T. Lynde,	Guilford, Vt.	650		
68	H. Brewer,	Framingham, Mass.	654		Old and new.
69	David Lee,	Barre, Mass.			Took 2d premium on new, $30.
70	John Prince,	Roxbury, Mass.	420		

The quantity of Butter was extremely large, estimated by the Committee to be little short of thirty thousand pounds; the greater part of which was of a very superior quality, and put up in very fine order. Some of it was in lumps and balls, and arranged most fancifully in boxes, tubs and pots. The Committee feel constrained however to say, that although it appears beautiful to the eye, yet from their experience it is a mode they cannot recommend for Butter designed for winter consumption. They almost invariably found, that when a large surface was exposed to the influence of the atmosphere, it was more or less injured from that cause. They would in future recommend, that when Butter is not designed for immediate use, it should be packed in firkins or casks, by which a smaller surface will be exposed to the air.

There was a lot of Butter of four firkins, sent by Mrs. Mary Noyes, from the Fatherland Farm in Byfield, for exhibition only, the quality of which was thought excellent by the Committee.

The Cheese in quantity did not compare with the Butter, more particularly the old Cheese; but the most of it, both old and new, was of a very superiour quality.

The Committee have had a very arduous and responsible duty to perform. They were assisted in their decision by some of the most judicious persons that the city of Boston and its environs could furnish; they feel under great obligations to Edmund T. Hastings, Esq., Col. Thomas Davis, William Stickney, Grenville T. Winthrop, and Newhall A. Thompson, Esqrs.—the two last kindly officiated as Secretaries; also to Messrs. Warren, Barry, and Park, who tendered their services to the Committee for awarding premiums on Butter and Cheese, in selling the same, as expressed in the advertisement, free of charge. The Committee and their assistants devoted the whole of Tuesday, from early morn until dark, without a moment's intermission, to the examination, and have concluded to award the premiums as follows:—

ON BUTTER.

1st premium of $100 to Luther Chamberlain of Westborough, Mass., for entry No. 23.

2d ditto of $50 to Henry Sprague of Princeton, Mass., entry No. 7 and 8.

3d ditto of $30 to Seth Davenport of Mendon, Mass., for entry No. 22.

4th ditto of $20 to Samuel Sawyer, 2d, of Sterling, Mass., for entry No. 37.

5th ditto of $15 to Gabriel Parker of Southborough, Mass., for entry No. 47.

6th ditto of $10 to Mrs. Lydia Page of Hardwick, Mass., for entry No. 19.

ON CHEESE.

1st premium of $100 to Ebenezer Tidd of New Braintree, Mass., for old cheese.

2d ditto of $50 to John Matthews of New Braintree, Ms., for old cheese.

3d premium of $50 to Roswell Converse of New Braintree, Mass., for new cheese.

4th ditto of $30 to David Lee of Barre, Mass., for new cheese.

The Premium Butter sold as follows :

1st	premium	from	32 to 37	cents	per pound.
2d	"	"	25 to 35	"	"
3d	"	"	26 to 27	"	"
4th	"	"	26	"	"
5th	"	private sale.		"	
6th	"	23 cts. per lb.			

E. HERSY DERBY, *Chairman.*

Boston, Dec. 7th, 1831.

REPORT OF THE COMMITTEE ON VEGETABLE AND GRAIN CROPS.

The Committee of the Massachusetts Agricultural Society " On Vegetable and Grain Crops,"—respectfully Report :

1. That Payson Williams, Esq., of Fitchburg, in the County of Worcester, is entitled to the premium of $20 on his grea crop of potatoes, being 584 bushels on one acre.

2. That Mr. Joseph Perkins of Newbury, in the County of Essex, be paid $20, being the premium on the greatest crop of onions.—His was 646½ bushels on the acre,—reckoning 52½ lbs. to the bushel.

3. That Mr. John Wilson of Deerfield, in the County of Franklin is entitled to the premium of $20 for his crop of winter wheat, 34½ bushels to the acre.

4. That Mr. Henry Sprague of Princeton, in the County of Worcester,—living on the farm of John Lane Boylston, Esq.,—be paid $10, as *a gratuity* for his large crop of Indian corn, stated to be 109 bushels on an acre. The premium proposed on this article was $20, and by Mr. Sprague's mode of *estimating* his crop, it exceeded the quantity required. But as he omitted to comply with one condition, which is deemed important,—that of *weighing* the corn and cob, in case of its not being shelled,—the Committee, while they are unwilling to pass over the claim of Mr. Sprague entirely, have thought they could not with propriety recommend the payment of the whole premium.

The Committee, thinking that the manner of raising these crops will be best seen by the letters of the claimants, recommend that they be published as part of this Report.

The Committee regret to state that, although thirty-one premiums have been offered by the Trustees, on crops deemed the most deserving the attention of farmers, in our climate, only four claims have been presented. In former years not less than an acre was required to be planted, in many cases, in order to put in for a premium. It was thought better in 1831 not to insist on an acre, thinking that possibly half an acre might make the trials more general. The claims, however, have been fewer than ever. The Committee are aware that for certain articles, such as potatoes, mangel wurtzel, turnips, &c. the season has not been as favourable as usual; yet as it has not been such as to cause a failure in any thing, and as in many things the crop has been abundant, they are disappointed that applications should not have been much more numerous. They

are convinced it might have been done, if *the inclination* to furnish out claims had not been wanting. The Committee can only hope that, should the Trustees repeat their invitation to our industrious and enterprising husbandmen, much more attention will be paid to it than has hitherto been shown. The single circumstance that the bounty of the Government has been put into the hands of agricultural societies, with a view to encourage and improve our agriculture, would seem sufficient to draw attention from our intelligent farmers. So much was said the last year, on this subject, in the report of the Trustees, that the Committee forbear to enlarge here, and would merely request a reference to the remarks then made, and to the instances of fine crops there set forth.

P. C. Brooks.
By order of the Committee.

[To the Committee on Agricultural Products of the Massachusetts Agricultural Society.]

Gentlemen—In presenting my claim for the premium offered by the Trustees of the Massachusetts Agricultural Society, for the largest quantity of potatoes grown on one acre, I will state, that the field cultivated by me the present season for that purpose, is a deep yellow loam, somewhat rocky—its situation uneven, with rather an eastern aspect; and has been for the last seven years used as mowing land. The sward was broken last autumn,—last May cross-ploughed, harrowed, and eighteen cords of unfermented sheep manure evenly spread, and immediately ploughed in. The sods again harrowed down and the field marked out three feet distant for the seed, which was placed eighteen inches apart in the furrow. The kinds of seed used were the Blues, three fourths—the other fourth of the Reds of La Plata, the Chenangos, and a variety of the Whites produced from the ball four years since on the farm of Maj. Benjamin P. Williams, of Roxbury. The quality of this potatoe is excellent, also yielding a large crop. I beg leave to name this variety *the Canterbury Whites*.

The planting was finished the 3d of June. When the vines were two inches above ground, the horse-plough passed twice between each row, throwing the earth from the plants, which were slightly dressed with the hoe. When the vines were eight inches high, and in the bud, the ridges between the rows were split, the plough throwing one half to each row, the hoe following to dress the vines for the second and last time. In three or four weeks the vines completely covered the ground, thereby preventing the weeds from vegetating. The digging commenced the 15th October, and finished the 21st, when by careful measurement we found five hundred and eighty-four bushels from the acre, and of these, three hundred and nineteen bushels were the product of the best half acre. In order to be understood, I will here state that in the item of the expenses, the manure, I place but about one third to the potatoe crop, deeming this a fair average of its exhaustion, the residue to be charged to after crops. The quantity of seed used was about eighty bushels. The reason for using so large an amount of seed, was the low price (12 cents) in our market, which induced me to plant the potatoe without cutting, as the saving by cutting, wouldnot pay the labour. My practice is, invariably, to cull the largest potatoes for seed. There is about sixty young apple trees growing on the field. Had the season been congenial for the culture of the potatoe, I should probably have had 700 bushels to the acre.

Yours, &c. PAYSON WILLIAMS.

FITCHBURG, October 21st, 1831.

I, Philip F. Cowdin, sworn surveyor of the town of Fitchburg, at the request of Payson Williams, did this day measure for him a certain lot of land on which potatoes were grown the present season, and found the same to be one acre, and no more. P. F. COWDIN.

I also certify, as above, that I measured one half of said acre to bounds set by those who measured the product, it being as I

understood the half acre from which was obtained the greatest yield. P. F. Cowdin.

I hereby certify, that I assisted, in the month of October, 1831, to harvest the potatoes grown on one acre of land (the same measured by P. F. Cowdin,) owned by Payson Williams, and by careful measurement found the same to be five hundred and eighty-four bushels. The number of bushels harvested from the best half of said acre, were three hundred and nineteen bushels. The kind of potatoes on this half acre were the Blues, Reds, Whites, and Chenango—on the half acre, which yielded two hundred and sixty-five bushels, they were wholly of the Blue kind. Elijah S. Carter.

Worcester, ss. October 21st, 1831.—Then the above named Elijah S. Carter made oath to the truth of the above Certificate by him subscribed.

Before me, David Brigham, *Justice of the Peace.*

EXPENSES OF CROP.

Breaking the sward, - - - - -	$5,00
Two ploughings, - - - - -	5,00
Two harrowings, - - - - -	1,50
Marking out and planting, - - -	6,50
Twice hoeing the field, - - - -	6,00
Harvesting the crop, - - - -	18,00
Manure exhausted by the crop, - - -	15,00
80 bushels seed, at 12 cts. (usually 25 cents at this season of the year,) - - -	9,60
	$66,60

It will be seen, that after deducting all expenses except the taxes and the interest on the land, the profit from one acre will be, (allowing the price 20 cts. per bushel,) fifty dollars and 20 cents. In view of such result, can any farmer, either book, or practical, for a moment remain unconvinced of the inutility of planting more than can be well manured? for the expenses

will be the same, except in the cost of manure, harvesting, and transporting a *large* instead of a *small* crop. W.

NEWBURY, Nov. 19, 1831.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN—In conformity to the rules and regulations of your society, I send you a statement of one acre of onions, the growth of 1831, the quality of the soil varies from a light yellow, to a dark loam,and has been cultivated with onions several years. The 20th of November last there were four cords of barn manure ploughed in, in ridges. The 28th of April following, the land was ploughed, and harrowed, and three pounds of seed sown in drills, fourteen inches apart. The first hoeing and weeding was done June 10th, which cost six days labour. The last weeding was done July 7th, which cost six days more. They were harvested the first of October; and nine thousand and seven hundred bunches have been bunched; which, estimating 15 bunches to the bushel, each bunch weighing 3½ lbs., make six hundred and forty-six and a half bushels.

JOSEPH PERKINS.

This may certify, that I assisted in cultivating and harvesting and measuring said crop of onions, which statement is correct. JOSEPH PERKINS, JR.

This may certify, that at the request of Joeseph Perkins, I measured one acre of land, and marked it off, which ground was covered with onions. TRISTRAM LITTLE.

Essex, ss. November 28, 1831.—Then the above mentioned Joseph Perkins, and Joseph Perkins, Jr. personally appeared, and made oaths to the above certificates by them subscribed.

Before me, SILAS MOODY, *Justice of Peace.*

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN—I have raised the present year, a very fair crop of *winter wheat,* which I take the liberty to report to you

for premium; if it should not prove to be the largest crop in the State, it certainly is a very good one for our old lands on Connecticut river, that have been cultivated for a century or more.

The land on which this wheat grew, is a deep black loam, and is flowed by the Connecticut, in the very highest floods. It was planted in 1828, with Indian corn after grass; in 1829, broom corn grew on the same land, which was manured in the hill. Both were good crops. In harvesting the broom corn, the stalks were cut by the roots, and laid between the rows, and a furrow turned on them. In the Spring of 1830, I cross-ploughed the land; the stalks had then become so tender, that they would separate at the joints: after harrowing it, I spread on about ten ox cart loads of manure, of different kinds, to an acre, then ploughed and harrowed again, and about the last of May, sowed it to hemp, at the rate of about two bushels to the acre: I then harrowed and rolled it.—7 acres and 93 rods produced 17 tons, 11 cwt. 2 qrs. 13 lbs. of dry stem, gross weight. After the crop of hemp was taken from the ground, I ploughed and harrowed the land, and in the fore part of October sowed about 3½ acres to wheat; the remainder I sowed to rye, and harrowed and rolled all, at the same time: the rye did not produce more than half as much to the acre as the wheat. The wheat sown was raised on my farm the year before on new land: it then produced well; but some of it was very badly grown in the field, so much so, that the wheat which I sowed was not fit to grind: this I mention to show that grain which has been sprouted so badly as to have the heads look green, will vegetate again, as was the case with some of this. It is a bearded wheat, brought from the state of New York two years before, and is probably the white flint. I sowed at the rate of about 1½ bushels to the acre: it was pretty thick, straw bright, mostly lodged, in different directions, as by a whirlwind. When reaping, I had one acre measured off in a parallelogram across the piece, which was kept by itself and threshed out in the latter part of August; which acre produced *thirty-four*

bushels and *two quarts*, and weighed, by several trials, from 59½ to 60 lbs. to the bushel. All which is submitted.

JOHN WILSON.

DEERFIELD, OCT. 22d, 1831.

Franklin, ss. October 24th, 1831.—Then John Wilson above named, made solemn oath, that the foregoing statement by him subscribed is true.

Before me, RUFUS SARTIN, *Justice of the Peace.*

I hereby certify, that I measured the piece of land above mentioned, and that there was one acre, and no more.

FREDERICK WILSON.

OCTOBER 25, 1831.

Franklin, ss. November 2, 1831.—Then the above named Frederick Wilson made oath, that the above certificate by him subscribed was true.

Before me, AARON ARMS, *Justice of the Peace.*

I hereby certify, that I helped reap, cart and thresh, and measured up the wheat which grew on the acre of land aforesaid, and that there was *thirty-four* bushels and *two quarts* of the same. ERASTUS STREETER.

Franklin, ss. October 25th, 1831.—Personally appeared Erastus Streeter, and made oath, that the above certificate by him subscribed is true.

Before me, HOOKER LEAVITT, *Justice of the Peace.*

A statement of particulars in relation to a field of Corn cultivated and raised by Henry Sprague, of Princeton, County of Worcester, in 1831, *on the Farm of John Lane Boylston, Esq.*

The field on which said corn was raised, contains one acre and one hundred and thirty-six rods by admeasurement, as will appear by the plan and certificate of Joseph Mason, Surveyor, which is hereunto annexed.

The land in the spring of 1831 was grass, or sward ground, and has not been ploughed for thirty years previous.

No manure was spread upon the land the preceding year, and none for many years previous, and the product of hay on said land, in 1830, was not more than four hundred to the acre.

Thirty-seven commoncart loads of manure were spread on said piece of land in the month of May last, and twenty-three common cart loads put into the hills; two rows of potatoes were planted on three sides of the field, which was dressed with the above-mentioned manure. The land was lightly harrowed after the manure was spread; and ploughed on the last day of April, and second day of May.

The seed was not measured, but from 5 to 7 kernels were planted in a hill.

The corn was planted or sown in hills, about 3½ feet distance: it was planted on the 26th of May, and hoed twice in the month of June, and hilled early in July: the crop was gathered or harvested on the 20th of October. The quantity raised was ascertained by first sorting and then filling one basket of each kind, without culling, which was shelled and measured; the remainder was then measured in the same baskets, and the entire crop of the above-mentioned piece of land was two hundred and two bushels and twenty-two quarts. Shelled and measured as above on the 14th day of November.

HENRY SPRAGUE,
ALBERT H. SPRAGUE.

Worcester, ss. November 21, 1831.—Then the above named Henry Sprague and Albert H. Sprague personally appeared, and made oath, that the foregoing statements by them subscribed are substantially true.

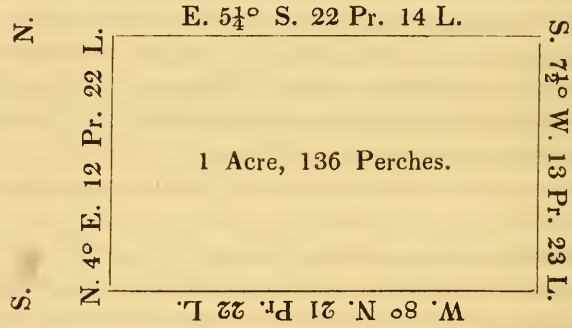
Before me, CHARLES RUSSELL, *Justice of the Peace.*

This is to certify, that I have measured the ground shown to me on the Boylston Farm in this place, whereon Capt. Hen-

ry Sprague raised his corn, which he intends to offer for a premium to the Massachusetts Agricultural Society at the Exhibition at Quincy Hall, Boston, in December next; and find the same to contain one acre and one hundred and thirty-six rods. The plan accompanies this. JOSEPH MASON,

Sworn Surveyor.

PRINCETON, Nov. 21, 1831.



Surveyed by JOSEPH MASON.

PRINCETON, Nov. 1831.

REPORT OF THE COMMITTEE ON THE BEST CULTIVATED FARMS.

The Committee appointed by the Trustees, to examine and consider the claims for premiums for the best cultivated farms, submit the following Report:

The Committee, with much regret, find that the premiums offered by the Trustees, for the best cultivated farms, have not received the attention from our respectable farmers, that was expected. Only three applications have been made this year; and although they all have merit, and appear to come from skilful agriculturists, your Committee do not perceive in either of them such superiority, either in their processes or results, as would justify them in recommending a premium. They had hoped

that the encouragement offered, and the desire, which they knew was generally felt by that respectable class of citizens, to promote the interests of agriculture, would excite a generous competition among our most intelligent and practical farmers, which would prove useful to themselves, and more useful to their brethren, who had less experience and skill than themselves, by enabling the Trustees to communicate, through their statements, their methods of cultivating their farms, with results,—the most satisfactory tests of good husbandry. The information communicated in this way would be founded on, and accompanied by, a history of the experiment, the best foundation of all science, and more especially of improvement in agriculture. To answer this end, or indeed any other valuable purpose, it is indispensable that the applicant should state with much particularity the kinds and qualities of the soil of his farm, his manner of tilling, manuring, planting, sowing, and gathering his crops; of manufacturing his butter and cheese, and making and preserving his cider; his rotation of crops, and the quantity of produce of every kind, and indeed all his processes and operations in carrying on his farm. To prevent misapprehension and insure this benefit from their statements, the Trustees, in their proposals, specified with minuteness the particulars which they deemed necessary to render their account useful to the public, and which they required to be stated as the condition on which the premium would be allowed; and although it was perceived that this particularity might occasion some trouble to farmers, it was hoped that the benefit they might derive from a more accurate record of their own proceedings, the consciousness that they were benefiting the public, and the premium offered, would be deemed an adequate compensation. The Committee, although twice disappointed, do not relinquish the hope they at first entertained, nor feel a doubt of the benefits that will accrue to our farming brethren from this measure, if they see fit to co-operate in carrying this into effect.

It is well known that the Trustees, for many years past, have given premiums for the encouragement of the cultivation of

nearly all the different agricultural products, vegetable and animal, that are grown in our country, and thereby materially promoted improvements in most of them; the judicious management and cultivation of a farm, it is thought, requires a combination and practical exercise, by the farmer, of all the knowledge and skill necessary for the cultivation of the articles separately that are produced on that farm. It is obviously a different science, more complex, more difficult to learn; requiring judgment, experience and observation to carry it into successful practice. A man may know how to cultivate any or all of those vegetables separately, and yet not understand how to carry on a farm to the best advantage. Next to an individual's own experience, is a true and particular account by others, of a judicious and skilful cultivation and management of farms like his own, where the expense of labour, markets for crops, and habits of living, are nearly the same; if he can have their method and practice fully and accurately communicated to him. The latter is indispensable to enable him to adopt their experience as his own. It will probably be found, that many important agricultural processes are yet unsettled, among our intelligent farmers; and some practise one way and some another,—sowing of grass seed is an instance,—whether it is best to sow it in the fall or spring, by itself alone or with grain, and what grain. Different practices and opinions, on this head, will be found in the few communications the Committee have received. Nothing in the opinion of the Committee would tend more to settle these questions, which must be determined by experience, than an interchange of the opinions, and accounts of the practices of scientific and experienced agriculturists, which a competition for these premiums would produce.

Although the Committee entertain these views of the subject, they cannot but feel a discouragement from the want of interest the public appear to take in it, which certainly ought to lessen their confidence in its practicability, if not its utility. They however venture to recommend the continuance of a bounty for this object, for one year more; provided the Trus-

tees shall think themselves justified in raising the premiums to an amount that will liberally indemnify the successful candidates for all the trouble and expense of taking the particular account required, and be considered an honourable mark of distinction to an intelligent practical agriculturist.

The Rev. Morrill Allen, of Pembroke, has claimed a premium for his farm of about seventy acres in that town. His statement, the Committee thinks, shows him to be a scientific and judicious cultivator. He states that he had no capital, and, in seaman's phrase, was obliged to work his passage; and it appears that he began with purchasing small parcels of land, one after another, gradually subduing the bushes, and enclosing them with walls, and then proceeded to improve the soil. Part of the land consisted of old fields, which had been exhausted by tilling without manure. These he renewed principally by the incorporation of earths of different qualities; the cold and tenacious soils he dressed with silicious earths, and other materials that tended to open and warm them; and sandy soils he dressed with clay and swamp mud, and alluvions in which sand formed the chief part. The Committee think Mr. Allen has shown judgment and discrimination in the mixture of earths, and making compost manures adapted to the quality of the soils to which they were to be applied, that is worthy of notice and imitation. It will be seen by Mr. Allen's statement, that he makes yearly from 300 to 500 loads of compost manure, by carrying earths, swamp mud, and vegetables, into his barn-yards and adapting the mixture to the soils it is intended for. This is rather a large quantity for the land he cultivates, and accounts for his crops of grass on land once exhausted. Last year he planted seven acres of Indian corn, three loamy and four sandy soil, and in one acre of the latter six cords of compost manure, and on another six casks of lime were spread, but he omits to state the quantities produced on these particular acres: no manure was laid on the other five acres, and the whole produced 298 bushels, which may be considered a fair crop for the quantity of manure used. Mr. Allen's rotation of crops is simple.

He tills nine acres, which he plants alternately with corn or rye, and once in five or six years plants with potatoes or beans or some other vegetables, which he thinks makes a favorable change from his common course; but here again he omits the quantity of manure used. His practice, he says, is, as soon as he has taken off the crop of rye, in August, to plough in the stubble, and sow grass seed, which produces herbage that he afterwards ploughs in as a green dressing. This practice the Committee take upon themselves to recommend, convinced that the farmer would find his labour and expense amply compensated by its mellowing and enriching his land, and saving his manure, the most precious article on his farm. The Committee regret that Mr. Allen has not stated when he sowed his rye, whether in the spring or fall. It has, they believe, generally been thought, that in common seasons Indian corn would not be ripe for gathering in season to sow winter rye. If this can be effected by planting early, or using corn that ripens early and yields well, it might often be found a convenient and advantageous succession of crops. Spring rye is by many not thought so certain a crop; but on this question a more extensive knowledge of the practice and experience of successful farmers is wanted. Mr. A. has also omitted the quantity of rye produced in this rotation of crops; but he tells us that in laying down his tilled land he prefers sowing his grass seed alone in the month of August, that September will answer better than either of the spring months, and that it is better to sow it with winter rye than with any spring grain. His clayey soils, not suitable for grain, he sometimes turns over with a plough immediately after the grass is cut, rolls down the furrows, and puts on a dressing of manure and seed again. In this way hay is his principal crop, and it appears that upon twenty acres which have been ploughed and laid down, and twelve acres of meadow and irrigated land, he usually cuts, according to his estimate, 33¾ tons of English hay of first quality, ten tons of second quality, and 14⅓ tons of inferior hay, making about 58 tons, better than 17⅓ tons to an acre, and over a ton of the first quality to

an acre. The Committee regret Mr. Allen did not receive the Trustees notification in season to ascertain the quantity of hay made this year, as he put it into his barns. The estimate furnished is one made in 1827, when the hay was in the barn; and he says his crops have varied but little for four or five years past. Mr. A. sells from ten to fifteen tons of hay annually, and keeps but a small dairy. Mr. Allen states that forty acres of his land are of a light sandy soil, and so much exhausted by tilling without manure, that he was discouraged from attempting to recover it in his usual way, and that last spring he ploughed three acres, fenced it in, and sowed it with locust seed, which have come up and look well, and he expects, if the worm should spare them, they will enrich his land, and produce a valuable though distant crop of timber and cord-wood. He has also ploughed and sowed five acres, this fall, with white pine seed, and was about ploughing in several acres with white-oak acorns. These experiments the Committee consider useful to the public, and creditable to the enterprising cultivator, and they most heartily wish him success. One man and a boy sixteen years old are employed constantly on the farm; and in addition, day-labourers are frequently hired.

It would give the Committee pleasure to be able to recommend a premium to this respectable and skilful cultivator; but, considering that the statement of the applicant to whom a premium is given, should not only show that his farm was judiciously cultivated, and his particular method, but also the quantities and amount of all the products, with as great certainty as the nature of the case will allow, in order that other farmers may be able and induced to improve by his example,—they think they should not be justified in recommending a premium to be awarded him; but they hope the Trustees will see fit to bestow on him a gratuity of fifty dollars, for the example he has set of judicious and skilful husbandry.

Peter Thacher, Esq., of Attleborough, has claimed a premium for his farm in that town, consisting of 300 acres. Mr. Thacher's statement shows that he has exercised good judgment

in subduing, renovating, and enriching his extensive farm. It appears that about ten years ago he purchased an old farm of 200 acres, now part of his farm, that for several years yielded him only three or four tons of hay, where he now cuts from thirty to forty tons of English hay. His method of cultivating, he says, has been to remove hedges and subdue the bushes by degrees, and plant but little, and manure that highly. He usually spreads five cords of manure on an acre, and puts five more in the hill, and for four or five years past has gathered crops of 200 bushels of potatoes, and sixty bushels of corn to an acre. That which Mr. T. seems to consider as his greatest improvement, is the bringing into good cultivation a piece of wet land, on the sides of a hill, covered with weeds and bushes. He commenced with the upper part, ploughed half an acre, drained it, and then carried on a quantity of old hay and long manure, and planted it with potatoes, and hoed them without ploughing, and it yielded a large crop of good potatoes; and in this way he reduced the whole piece, and it now produces a great crop of English hay. His rotation of crops has been potatoes the first year, the second corn, and the third spring rye, with which he sows grass seed as early as the state of the ground will permit, and rolls it down with a heavy roller. He prefers spring rye to oats to lay his land down with, and the spring to the fall, and thinks the grass seed takes better with rye than oats. Mr. T.'s practice is to make large quantities of compost manure in his barn-yard and hog-pens: in the fall he carries it all out of his yard, and the next spring spreads the manure thrown out of the barn, over the straw and hay that has been collected in the yard during the winter, and covers the whole with a crust of loam that he carts in, which he thinks prevents the strength of the manure from escaping. This compost he uses both for his corn and grass. Mr. T. has 500 apple-trees on his farm, 400 of which are mostly natural fruit, and appear to have received no particular attention from him; the other hundred are young trees, engrafted with good fruit, and these he has practised washing every spring with soap and ley, mixed in equal parts,

and digging around and manuring them. He keeps fifty sheep, for some of which he says he has received a premium in his own county ; but makes no more butter and cheese than is wanted in his own family. The Committee were particularly pleased to find that Mr. T. was able to carry on this large farm without any ardent spirits. This practice, wherever adopted, will prove as beneficial to the labourer as the farmer—highly beneficial to both.

Although the Committee cannot report that they consider Mr. Thacher entitled to the premium proposed by the Trustees, they with pleasure state, that they think he has great merit as an agriculturist, in subduing and bringing to a state of good cultivation a farm, which, a few years since, consisted of rough, exhausted and profitless land.

Jonathan Allen, Esq. of Pittsfield, in the County of Berkshire, has also presented a claim for a premium on his large and excellent farm in that town, accompanied by a statement of his manner of cultivating, and the products he gets from it. The farm consists of forty acres of meadow or intervale, which receives its manure annually from the overflowing of the Housetonic, and about 210 acres of upland. Mr. Allen appears to have exercised much agricultural science, as well as care and attention, in the cultivation of his farm, and in making useful agricultural experiments. It will be recollected that Mr. Allen applied for a premium on this farm last year, and presented a statement of his manner of cultivating it, the crops it produced, the rotation he has practised, and the result of his experience as to the best time and manner of laying down land to grass. This statement was noticed by the Committee, and published with their report in the Massachusetts Agricultural Repository. His statement as to the general course of his husbandry is not materially varied this year, and the Committee regret to find almost the same want of particularity as to the quantity of products. The quantity of hay, his principal product, rests on estimate, without having weighed a load : a small part only of the winter rye and oats were threshed, and no

part of his spring rye or beans were threshed, or in any way measured; but his Indian corn was, and four acres were found to produce 450 bushels of ears: Indian corn was grown upon the same land the year before, and this year it was manured with seventeen loads to the acre, put into the hills. Sheep are the principal stock of the farm: he kept 430 this year, from 350 of which he sheared 851 lbs. of wool of the first quality. *May* he considers the best time for lambs to come. Mr. Allen states that in years past he has made experiments in raising potatoes, and this year has made many more with care and attention, which, in the judgment of the Committee, entitle him to the thanks of the public. For a particular account of these experiments they refer to his statement, which accompanies this report, and recommend it to the attention of agriculturists. From a remark of Mr. Allen, that he could not with convenience thresh out his grain in season to measure it so early as was required, the Committee apprehend he must have misunderstood their regulation, which only requires that the application should be made by the first of October, but the evidence or particular statement may be exhibited any time before the first of December. It appears to the Committee that Mr. Allen has cultivated his farm like a skilful and attentive agriculturist, and realized great products, and they hope profits; but his statement is too general and indefinite, leaving the quantities of the greatest part of the produce to depend on estimate; and they think does not, on the whole, show his cultivation so superior as to justify them in reporting in favour of a premium. Considering, however, the pains Mr. Allen has taken to introduce upon his farm a variety of vegetable products, and choice fruit, and especially the nice care and attention he has given to the cultivation of potatoes, the most valuable of our roots, the Committee recommend a gratuity of thirty dollars to be granted him.

Wm. Prescott.
P. C. Brooks.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN,—Situated at a distance from any considerable market town, it would be absurd in me to think of entering into competition in the aggregate amount of crops, with farmers in the vicinity of the city, where manure is attainable to any desired extent. On the supposition that the management of farms is judged in reference to local advantages and inconveniences, my hope is founded of sustaining a claim to a premium. There have never been any very great improvements made on my farm in any one year. The object has been yearly to add something more in earthy and vegetable substances to the fields, than was taken from them in the removal of crops. To give a just idea of improvements made, a brief history of the operations may be necessary. My first purchase of land was in 1802, fifteen acres,—the greater part of which was in a very rough state, and as much of it as had been tilled reduced by severe cropping. The rocks were removed to enclose the ots, and the bushes subdued with the plough, as fast as the necessary means could be obtained for accomplishing those objects; the progress was not rapid in the beginning, because, being entirely destitute of capital, I was obliged, in seaman's phrase, to "work my passage." When the fields were enclosed with walls and the bushes subdued, attention was directed to the plats which had been tilled almost to exhaustion. And the principal means of renewing them within my power was the incorporation of earths of different qualities. Cold and tenacious soils were dressed with silicious earth, andother materials that tended to open and warm them. Sandy soils were dressed with clay, swamp mud, and alluvions in which sand formed the least considerable part. This course, in seven years, gave ten tons of English hay where less than two were obtained before, and about double the quanity of grain on the acre. In 1817, another lot of sixteen acres, a large portion of it in a similar state with the first, was purchased and managed

in the same way. About the same time were purchased seven acres of fresh meadow, on which no other improvements have been made than clearing away bushes, tunnelling and cutting ditches in such directions as would irrigate the whole meadow. Another small lot was enclosed from a pasture, in 1820, and has since been cultivated as English meadow and tillage. Four acres of the above lots are light sandy soils, six acres hazel loam, suitable for grain or grass, five acres dark friable soil, fifteen acres argillaceous, and ten acres of irrigated fresh meadow. Seven acres were planted with Indian corn the present year, three acres of loam and four acres of sandy soil. On one acre of the loam about six cords of barn manure were spread and ploughed in ; on another acre, where in other years meadow mud had been applied, six casks of lime were spread ; on the other fields, which produced rye the preceding year, there was no application. The corn was planted in drills,—this method has been in practice on the farm more than twenty years, and is in my judgment preferable to any other. The corn was harvested between 20th Sept. and 20th Oct. Weight of whole crop 22381 lbs.—298$\frac{3}{7}\frac{1}{5}$ths bushels. The same fields the preceding year produced 120 bushels of rye. The present year there were only about two acres in rye, and the produce was 25 bushels.

There are *nine* acres in tillage, alternately planted with corn and rye, excepting once in five or six years, each field is planted with potatoes, beans, or some other vegetable considered favorable as a change from the ordinary course. The stubble of rye is ploughed in, immediately after the removal of the crop, and some kind of seed applied to produce herbage to be ploughed in as green dressing. Potatoes this year were planted only on the borders of cornfields, under trees, and in other situations where not much produce could be expected,—80 bushels were gathered. From 200 to 300 has been the average crop in the last four years. No other roots are cultivated except in the kitchen garden. Thirty-two acres were mowed, twenty of which have been ploughed, and will produce good

English hay in common seasons, with liberal manuring; but a succession of wet seasons has introduced on a part of it so much wild grass, that the hay is not now suitable for the market, though good stock hay. There are ten acres of irrigated land, as above mentioned, and two acres of fresh meadow over which water does not often pass. The hay was located, before the offer of premium was published, in such manner that it is impossible for me to ascertain with accuracy the quantity. Some of it was placed in barns with old hay, and some of it sold in the fields. The crop of hay has varied very little for four years, yet supposed to have gradually increased. In 1827, the whole crop was measured in the mow in September, after it was thoroughly settled. Four cords of English hay were considered equal to a ton, and five cords of fresh. According to that measurement, there were 33¾ tons of first quality or good English hay, 10 tons of second quality, and 14⅘ths tons fresh hay. Five acres then mowed are now in tillage. From two to three tons of second crop areannually cut, in situations where it is not convenient for cattle to feed. Compost manure, made with reference to the quality of the soil where it is to be applied, is every year spread on the mowing land. Sand is made a principal ingredient of compost for the clayey soils, and swamp mud or clay for loose soils. From three to five hunred loads, 40 bushels in the load, are made in a year and applied chiefly in autumn, not so much from choice as necessity, there being no other season of sufficient leisure to accomplish the work. In laying down tilled land to grass, I choose to sow the seed about the last week in August and put no grain with it; but any time in the month of September will do better than either of the spring months; and if sown with winter rye, it will do better than with spring grain. The clayey soils which are not suitable for grain, I sometimes turn over with the plough immediately after the grass is cut, roll down the furrows, and put on a dressing of manure and seed again. In this course, cultivated grass is renewed without the loss of any crop. I use chiefly herds grass seed, and put one fourth of a bushel on an acre.

I have forty acres of pasture of alight soil, and, in the possession of other owners, it was alternately tilled and pastured in so quick succession that only very small crops of corn or rye can now be obtained. The number of acres discouraged me from attempting to renew it in my usual way of mixing soils; and therefore a plan is formed to renew it in the operations of nature. Last spring a field of between two and three acres was fenced, ploughed, and sowed with the seed of the yellow locust tree. The seed came up well and the most thrifty of the young trees are now three and a half feet high. If the worms should not oppose me, there will probably be a very flourishing grove, which in a few years will effectually recruit the soil. In this connexion, it may not be amiss to mention that I have this fall sowed five acres of common land with the seed of white pine, and am now planting several acres with acorns, which it is intended to protect against cattle with a fence.

The number of apple trees on the farm is eighty, most of them situated in two small orchards. There are some scattered trees, and a few cultivated in the garden. Nearly half the trees have been ingrafted, chiefly with winter fruit. This year there are no apples. The last year, probably, there were an hundred bushels of winter apples, and enough beside to make six or eight barrels of cider. The principal attention given trees after they have attained the bearing state and need little or no more pruning, is to scrape off the rough bark and moss early every spring and wash the bodies of the trees and the large limbs with very strong soap-suds or a solution of potash.

The barns have been built in succession, and some of those first erected are of very incommodious form for the general purposes of a farmer. They were built when there was no expectation of needing much room for the storage of hay and grain, and some other uses of them were in contemplation. The first barn is 20 feet wide and 30 feet in length, the second 20 and 40; the third 30 feet square, built for the exclusive purpose of storing hay; the fourth 26 and 30; and the fifth 30 feet

square. Under a portion of two of the barns openings are left to shelter the cattle from the severity of the weather. The barns were located with a view to convenience and facility in getting the hay and manuring the fields. There are four barn-yards, three of them are built square, and hollowed a little in the middle, for the retention of the manure; the fourth is of irregular shape, to give the cattle access to a spring of water. Into the yards, such kinds of earth are carted, as are considered best adapted to the fields where the manure is to be applied. With the earth every sort of vegetable substance is incorporated, which can be easily obtained. These, with the droppings of the cattle, make rich beds of compost every year.

The usual stock on the farm consists of one horse, six oxen, three cows, and eight or ten young creatures. The horse and oxen not pastured much on the farm. From about the middle of July to the first of September this year, five cows were milked, two of them heifers of only two years old. The cows were under the care of a tenant. Cheese-making was not commenced early in the season, and continued only to 20th September. Milk was daily taken for the use of the family, in which there are several young children. The return of cheese made was 464 lbs.. From the 20th Sept. to Nov. 5th, butter was made with four cows and the milk given to swine. The return of butter was 70 lbs. The cows have something of mixed blood, but are chiefly of native breed, and were raised on the farm. Three swine only are kept, fed with the refuse of the house, boiled potatoes, and corn. The annual quantity of pork is about 900 lbs.

My cattle in winter are fed chiefly on hay, milch cows have some meal and vegetables, and oxen intended for beef the succeeding fall are fed with some grain the last of winter. Calves to be raised are suffered to suck one half the milk of the cows ten weeks, then put into a good pasture till October, when they are put with fattening cattle, where they soon learn to eat whatever is given out, and become very vigorous to endure the inclemencies of winter.

About two tons of beef are made in a year on grass, green corn-stalks and refuse corn. Oxen and cows are generally turned off to beef for some other reason than the particular age; and at what age it would be most profitable to turn off those of excellent qualities, is a question which has never employed much of my attention. The principal product of my farm is hay, of which ten or fifteen tons are annually put up for sale. The residue is sufficient to winter twenty-five head of cattle; but the pasture not being equal to the summering of nearly that number, a part of the stock wintered is often sold in the spring. One man and a lad sixteen years old labor constantly on the farm; in addition to which, day laborers are frequently employed. The present year, twenty acres of the mowing land were put out on a share, and forty days labor hired. One gallon of rum was used by some elderly laborers, who have worked on the farm more than twenty years in the hay season; and the owner supposed the cause of temperance would be injured rather than promoted in withholding from these men their accustomed portion, who never in their lives, to his knowledge, drank to intoxication.

Respectfully submitted,

MERRILL ALLEN.

Plymouth, ss. Pembroke, Nov. 21, 1831.—Personally appeared before me the above named Merrill Allen, and made oath that the above statement by him subscribed, was true, according to his best knowledge and belief.

KILBORN WHITMAN, *Justice of Peace.*

Lot	1,	15 acres,	Part in a rough state—part too much cropped.
"	2,	16 "	Much the same as the above.
"	3,	7 "	Meadow—fresh meadow.
"	4,		Small lot from a pasture.

4 acres are light sandy soil. 6 acres hard loam, suitable for grain and grass. 5 a dark friable soil. 15 argillaceous. 10 irrigated fresh meadow.

This year three acres of loam, and four acres of sandy soil were planted with corn.

On one acre of loamy land, six cords of manure were ploughed in. On one acre sandy, six casks lime—in other years, meadow mud had been put in.

On the other fields which produced rye the preceding year, no manure.

Corn planted in drills, gathered 298$\frac{1}{7}\frac{1}{5}$ths bushels 42$\frac{4}{7}$ths.

Nine acres in tillage—corn and rye alternately—excepting once in five or six years, a crop of potatoes or beans.

The stubble of the rye is ploughed in immediately after taking off the crop, and some kind of seed is applied to produce herbage.

From 200 to 300 bushels potatoes his average crop for three or four years past.

Mows 32 acres—twenty of which have been ploughed—yields good English hay.

10 acres of irrigated meadow—and two acres of fresh meadow.

1827. 33$\frac{3}{4}$ tons of hay, first quality.
10 do second quality.
14$\frac{3}{6}$ths fresh hay.

58

Sand principal ingredient for clayey, and swamp mud in sandy loose soil—300 to 500 loads—in autumn.

Benjamin Guild, Esq.

Dear sir,—It is but a few days since I saw or knew of the premiums offered by the Massachusetts Agricultural Society for the best cultivated farm; and a less number, since I thought of offering mine. Not being in the habit of writing, I fear I shall make a bungling hand at it. I do not suppose, that mine will compare with many of the farms in Massachusetts, where there has been thousands laid out; but believing that I have made considerable improvements within a few years, with small ex-

pense, I therefore offer my farm, which lies in the East parish in Attleborough, containing about three hundred acres of land, lying nearly square. The soil is variable as to quality; there are about twenty acres of old fields, worn out, lying at one corner; about fifty acres deep black loam, and nearly clear of stones; about thirty acres of meadow or low land; about one hundred acres of wood-land lying upon one side; and another part of strong, moist, cold land, which never was ploughed, and might nearly all be made into excellent mowing land,—but it is used as pasture. My English mowing lies at the head of a small spring brook, and has something of the shape of a plate, except that there is one place for the water to pass off, and the meadow or low land lies on said brook, to where it enters Ten Mile River.

Two hundred acres of this farm I purchased about ten years since, for which I paid $5000. The said farm was very much run out, having been let for a number of years. The first year I cut but three tons of English hay, that could be called good, on the farm that I sold. Two or three of the last years I suppose I have cut from forty to fifty tons yearly. The last year I kept an account of what I sold, which was about eighteen tons, which I put into a barn by itself; that I sold for $16 per ton, by carting it five miles to Pawtucket. The remainder of my English hay, I put into another barn for my stock, and it was quite certain that I did not sell half of it. This year I think I have put into the same barn twenty tons, for fall, which filled a 30 by 40 feet barn, when it was first put up. I put more than this into another barn for my stock. Of said hay all but about two loads was cut on the said two hundred acres, and I have turned out about fifteen acres to pasture that was formerly mowed. The method I have taken has been to move fences and subdue hedges, plant but little and manure highly. I have made it a rule for five or six years past, to plant about four acres with potatoes, and get from one to two hundred bushels per acre,—and four with corn, yielding about sixty bushels to the acre of shelled corn. I general-

ly spread on about five cords of manure to the acre, and put about as much more in the hill. My hands have told me sometimes that I should spoil my potatoes by putting in so much.

But the greatest improvement I have made is in subduing fallow land, which was always run round as though it was worthless; and it indeed was, as it then lay, for it was in the way, lying in the middle of my mowing land, and yielded nothing of any value. I begun upon the upper side (for it lay on a gentle descent) and ploughed about half an acre for experiment, and drained it as well as I could, but the water was constantly issuing out of the ground on every part, in our driest seasons. My neighbours told me it was labour lost; but I carried in considerable old hay and long manure, and laid it out for potatoes, and planted them on it, and hoed them to subdue the ground, for we could not turn it over with the plough, that it would not turn back. In the fall we gathered a fine crop of large excellent potatoes. I think I have learnt by experience that blue or red potatoes are better suited to this soil than white ones.

I went on till the whole was subdued, and laid down to herds grass and Rhode Island hay, being about four acres, and now it produces from two to three tons of good hay per acre, yearly. There is about six or eight inches of soil or mud on the top, and we then come to a hard pan of gravel and clay.

I have generally sown, for a number of years, five or six acres of pasture land to winter rye, such as was suitable, and put on no manure. I only take off a crop, and let it lie for pasture; generally sowing on Rhode Island seed with the rye. Sometimes I have sown it on the snow in the Spring, for experiment, but I do not know that it makes much difference. My winter rye is usually light, say six or seven bushels per acre.

I have sown down mowing land with spring rye, believing it to be much better than oats for the land, and also for the grass. The seed will take much better for some reason; and that ground which is not suitable for rye I sow only with hay seed. I put on manure only when I plant it. Spring rye is generally

quite good, say from 12 to 15 bushels per acre. I generally reserve a spot for round or English turnips, and sometimes plough a piece of sward, after taking off the hay where I intend to plant the next year, turning it over smooth, and spreading on some manure—then harrowing it well with a light harrow to cover the manure, but not harrowing up the sward; then sow the seed thinly, and harrow it in; and sometimes raise a good crop very early in this way, say from one to two hundred bushels per acre. I also sow turnip seed on my manure that I dress my corn with in the hill, and raise my early turnips for the family, and sometimes a large quantity of large turnips for the cattle. I have also made a point of raising a number of bushels of ruta baga for my table and cattle, which I think are very excellent for milch cows.

I have about 60 acres of English mowing, and I generally have from 12 to 15 acres of it up to corn, potatoes, and spring grain. I plant none but this. I have ploughed all of it; but shall not think of ploughing the low lands mentioned any oftener than I find it necessary; but shall spread manure every fall.

The hay consists of herds grass or timothy, red top, Rhode Island, and clover. I have a ditch out of a swamp, and can water almost all my mowing, in the fore part of the season. I mow about 30 acres of meadow or low land, which I think cuts about thirty tons of hay, or nearly, and is principally the common brook meadow grass. I have thrown the water over a part of it, which has made considerable improvement to quantity and quality of hay. I like to raise my own hayseed and sow it,—I think it does much better than I can buy. I do not clean it, therefore, I cannot be particular as to quantity. I want but little Rhode Island or red top, but am not afraid of putting on too much herds grass, or clover. If we do not put considerable clover seed on rich ground, the hay will be very coarse and nearly worthless. I choose the early spring sowing, and think it the best; but wait till the ground gets dry, if it is not till the fall. I have been troubled about low ground taking the seed; and have a number of times sown in the

spring, after the land was laid down, on what sward there was, and it has done well. I have about a hundred and thirty acres of pasture land,—about one half of which was never ploughed. One half the other I plough and sow to rye as before mentioned; the other quarter has scarcely been ploughed this forty years, or since my recollection.

The number of apple trees on the farm is about five hundred, mostly in orchards. One orchard of about one hundred trees was set out about forty years ago. One of about one hundred trees about twenty years ago. One of about two hundred trees about fifteen years ago. The greatest part of them are natural fruit. About fifty grafts have been grafted occasionally, as opportunity offered, and some of them are hardly in bearing. To those trees we have done but very little, except trimming, and putting chip manure and old pumice around them, to keep the sward loose. I made about 90 barrels of cider last year, saved about ten barrels of excellent winter apples, and sold as many as 30 bushels of fall apples, and used a number of bushels in the family. As to making cider, my rule is to pick the apples as soon as I think them worth picking, and make them up into cider; and as soon as apples are ripe, shake, and pick the rest, and put them into an apartment in the mill, so that they will not heat, and keep them till they are mellow, and then make them up, and see that the mill and press are clean and sweet. I grind them out in the afternoon, and let them lie in the trough, and on the press, till the next morning, then press the cider out, put it into clean casks, roll it into the cellar, place it where it is to stand, knock out a bung, let it work, and stop it again as soon as it is done.

I put the greater part into two hogsheads. I like them best, and am very careful to keep them sweet. My rule is, as soon as the cider is out to wash them clean, and dry them, and put them in the cellar; and if they get foul, I have tried to cleanse them by setting a rag dipped in brimstone on fire and putting it into the barrel, then bung it up and sweeten them in that way;

but the better way is to throw them aside, and get more. I calculate to pick all my apples by the first of October.

I have another orchard that was set out two years ago last spring, of one hundred trees, all selected, and of the best kinds of fruit. There are twenty-eight kinds. This orchard I have nursed, and manured highly, and it looks very thrifty. I wash the trees with soap and ley mixed in equal quantities, in the Spring, which I think is far superior to anything else I have ever used or heard of. As to my house, it is 28 by 33 feet, two stories high, with a kitchen 16 by 16 ; a cheese room, milk room, and buttery running out back ; with a well-room, wood-house, wagon-house, farmer's work-shop 33 by 16, a tool-house, a corn-barn, chaise-house, and cider-mill adjoining the kitchen, and nearly reaching the barn, which is 30 by 70, with two barn-floors. I can tie up twenty head of horn cattle, and put up four horses. There is a shed at one end, 12 by 60, and a barn-yard adjoining about five rods square (with a well in it) where I keep my oxen, cows, and sheep, not letting them get loose through the winter.

I have another barn, already mentioned, where I keep my hay for market, which is 30 by 40 ; another barn 20 by 30, which I fill, barn floor and all, with my poorest hay ; a shed adjoining, 60 by 12, with a warm yard also adjoining, where I keep my young cattle, and let them go to a spring in the lot near said barn to drink. This yard I clean out in the spring, heaping up the old hay and manure, as soon as the frost is out, and at planting time draw it out and manure my potatoes with it, there being about 20 loads. My other yard, where I keep my other stock, I clean out in the fall ; then fodder my cattle in it all winter, then cart my green manure that was thrown out of the barns, and spread it all over the yard, and then cart in as many loads of loam and spread it over the manure, to keep it from drying up ; then yard my cattle upon it all summer, ploughing and mixing it occasionally out of this yard. I carted 119 half-cord loads of excellent compost last fall, 40 loads of which I put on my corn ground for spring.

The other 79 loads I put on my English mowing, and spread it. This has been my method for a number of years as to manure.

I have a hog-pen also, walled in with a thick tight wall, about three rods square, the north corner of which is dug into a side hill, at which there is a nest covered with flat stones; at the south corner of which there is a pair of bars and a house to feed them. The north-east and north-west sides we can back a load up, and tip it over the wall into the pen. This I clean out in the Spring. Last Spring I carted out 60 half-cord loads, which I spread on my planting land. My method here is, as soon as I clean it, to cart in old hay and straw, then loam and green manure, and add to it in the summer anything that will rot, such as bulrushes, brakes, and small whortleberry brush, which grow in our rocky pastures, and are regularly cut every other year, half yearly, and with weeds which we throw in when at leisure. I also go to the sea-shore, which is 14 miles, and get a few loads of sea-weed, which I think very excellent to mix with other materials, and cart some mud out of a pond-hole in the woods, which is a mile off. I keep four oxen constantly, and generally a pair of steers to work, five cows constantly, and about thirty-five head of young stock. I have always calculated to raise my own stock, and raise about eight or ten calves yearly, and keep them till they are three years old. I have calculated to fat and sell $100 worth of beef yearly. I keep one horse and about fifty sheep about one half blooded merinos. The quantity of butter and cheese I can tell nothing about, we make little excepting what we use in the family.

My stock is the native breed, except seven years since I purchased a very fine bull, that came from New Hampshire, said to be of the Beckworth breed. I have ever since kept a bull descended fr om him, and have taken a premium on some of them at the Bristol County Society, also on some cows of the same breed.

As to my hogs (I calculate to raise my own pigs,) they gen-

erally weigh about 300 lbs. apiece, and are usually six in number.

As to labor on the farm, I have a son about 19 years old, and I have usually one hand seven months in a year, at 12 or 13 dollars per month; also a boy, and a number of hands in hay time. This year I hired about thirty days work, at thirty dollars. I collected all our hay into barns and stacks before August. We work out our team nearly or quite enough to pay our help. We have not used any ardent spirits for three years, and get along much better than formerly when we did use it, for there is now no grumbling, as there was then, for want of more. We use cider, hop beer, sweetened water, and milk and water. I generally hire such help as have families, and want all their pay from the farm.

As to rotation of crops, I like to plant potatoes the first year, corn the second, and sow down the third year with spring rye, as early as the ground will permit. I sow nearly a bushel to the acre, then harrow, and roll it in with a good heavy roller

I feed my stock in the fall with corn fodder, and good hay till cold weather comes, then with my poorest hay till spring, then with better. I give milch cows some roots in the winter, such as turnips and potatoes, beginning in the fall, and continuing them through the winter, lightly, as they will hold out. I never have any roots to sell except to hired help, although we have probably some years raised nearly a thousand bushels.

To my oxen I give five or six ears of corn daily, and when I work them hard, a little meal.

My calves that I intend to raise, (which must be entirely red) I have sometimes suffered to suck, and sometimes I have fed them with new milk, till they were weaned. But the better way on the whole, in my opinion, is to take them from the cow at about five or six days old, and give them new milk a few times, and then milk porridge once a day, and they will do very well without new milk; in a few weeks, a little dry meal is very excellent. I wean them usually at three months old. I usually keep six hogs, and fat them principally on pumpkins and po-

tatoes, boiling them together,—I have a kettle that will hold about three bushels,—mixing them up with a little meal, adding more meal from time to time till they are fat. I frequently give them a little green corn on the cob, for a change.

As to fatting cattle, I have no certain rule as to the age, but usually fat them young. I seldom keep cattle till they get on the decline. Some cattle will do very well till they are twelve years old, others fail younger, I usually fat them with grass and green stalks, and when they are done I turn them off as quick as possible.

As to sheep, I have taken the first premium at the show in Bristol County a number of times, on some of them. I let them run with the cattle in winter ; they will pick out a good deal that cattle will not eat. I give them a yard that they can run into away from the cattle, where they usually lie. I also have a rack in that yard, made on purpose for them, set perpendicularly that the seed may not get into their wool. I feed them with English hay. I have for some years, but not always, given them corn and turnips through the winter. I think they never did better than they did last winter. I kept them as usual (but without provender) till about the middle of February; then I fed them in these racks with fine clover hay,—and after they begin to lamb, give them some corn, and turnips, as long as they would eat hay. I let them out of the yard as soon as the grass starts up a little in the Spring. I think they do best. I generally have them lamb the first of April, when I can keep my neighbours' rams away from them. I wish to mention one thing, which I fear you will think a pretty large story. I have a four years old ewe sheep (a cade), that never had a lamb ; she is always fat, and never would eat any provender of any kind, and always goes with the young cattle, and lives on the poorest hay I cut. Last Spring I sheared 11½ lbs. of fine wool from her. An agent of a large woollen establishment saw her, and said he never saw any thing like her before ; but this wool was two years old, not being sheared in 1830.

This rough draught was drawn in haste, and is quite imperfect. It is much longer than I expected, when I began.

I am, dear sir, very respectfully, your obedient humble servant, PETER THACHER.

P. S.—If I have any thing to boast in farming, I must acknowledge that I received it from the New England Farmer. I began with the second volume, and have since read it very attentively.

Attleborough, East, September 28th, 1831.

Bristol, ss. September 28th, 1831.—Then personally appeared Peter Thacher, subscriber to the foregoing statement of facts and description of his farm, and the management of the same, and made oath that the same is true.

NOAH CLAFLIN, *Justice of Peace.*

PITTSFIELD, September 29, 1831.

[TO BENJAMIN GUILD, Esq., Secretary of the Massachusetts Agricultural Society.]

SIR—I wish to offer my farm for premium. It lies in the east part of the town of Pittsfield, upon the Boston and Albany stage road, containing two hundred and fifty acres or thereabout. The soil is alluvial and loam; forty acres of it good wood land, principally covered with sugar maple. I have also, in one square lot, forty acres of meadow, almost perfectly level, and overflowed by the waters of the Housatonic river (by which it is bounded on the east,) in the spring of the year when the snow melts away, generally; and sometimes twice or thrice in a year,—so that it never requires any manure, and I have nothing to do but to keep up my fences and cut the grass, which is all of an excellent quality, consisting of herds or timothy, clover and fine English,—has produced this year one hundred and six loads, which we have estimated to weigh one ton each, as we get it in, well made. This lot lies upon the east side of the road, opposite to my house; and the residue

of my farm upon the west side of the road, pretty nearly in a square form, a little elevated above the meadow, say eight or ten feet, and rises but little to the western extreme of the farm. I have an orchard lot, consisting of about eighteen acres, which I mow, and which has produced this year twenty-three loads, which we have estimated at one ton each, of excellent hay; making in all one hundred and twenty nine loads.

The residue of my farm consists of pasturage and tillage, say 147 acres, all good, which I have improved alternately for pasturage and tillage by a rotation of crops; first for wheat or rye, then corn, then oats or other spring grain, with clover and grass. I have improved it the present season as follows; of winter crops 20 acres, called—but if accurately measured would fall a little short of that quantity; it has however produced 4568 sheaves, 900 of which we have threshed, and which yielded 51½ bushels of first quality rye; 3 acres of winter wheat, which produced 911 sheaves, of which we have not threshed any. These two crops were sown upon old pasture land, summer fallowed and without manure. The 911 sheaves of wheat, or 60 shock and 11 sheaves, will yield by fair estimate ¾ of a bushel to the shock, which will amount to 45½ bushels. I have raised 14 acres of oats on land on which I had beans last year. After putting a light sprinkling of manure of 20 loads, the 14 acres produced 3080 sheaves, of which I have threshed 550 sheaves, which yielded 54 bushels—very nearly one bushel to 10 sheaves. I have also raised two acres of spring rye, which produced 601 sheaves; of this crop I have not threshed any, but it is a good one, and so good as to give me the B. A. Society's first premium. I had oats upon the land last year, but I put 20 loads of manure upon it. I sowed two acres of marrowfat peas upon land upon which I had potatoes last year, but the crop failed almost entirely, and I got but twelve bushels. I have also raised one acre of buckwheat where I had beans, put six loads manure and sowed one bushel of seed, which produced seventeen bushels. I have also raised two acres of white beans, which is a very good crop, but which I have not been able to

harvest. The time you have fixed on for making application, (1st Oct.) is a little too early for my convenience, and I shall not be able to make my statement complete in all respects. For instance, it would be considerable loss to me, I should think, to thresh out all my grain thus early, particularly oats, as the straw makes tolerable feed in winter—and it also furnishes employment for my man who takes care of the sheep and barn. Potatoes I have considered among the first and most valuable crops that the farmer raises; I have therefore made several experiments, and by far too many for my interest; yet my experience may be useful to others, and I have concluded to state some of my experiments, and offer some few remarks.

Some few years since, believing that the quantity usually raised from an acre might be increased materially, I accordingly ploughed one acre of mellow land, dragged it, and furrowed it out at three feet apart, and filled the furrows with well rotted manure. I then sorted out the largest and best potatoes, and planted them in the furrows on top of the manure, placing one potato every six or eight inches apart; then planted in the whole forty-five bushels; they were well covered and hoed three times, and at digging they were found to be almost all of them very small, not larger than walnuts, perhaps not as many good ones of good size as I planted. This I charged to the season as being unfavourable, and the subject passed off. Two year since I set out twenty-four cuttings of grapes, in my garden, where the ground was rich, being well manured, by sticking the ground end into a small potato, about the size of a hen's egg, and placing that in the ground three or four inches deep; these were not hoed,—the grapes all died, and in the fall, I pulled and dug the potatoes somewhat early in the season for eating. The quantity and large size excited the curiosity and astonishment of us all. Last year I planted in the garden, by way of experiment, one of the smallest potatoes, one of middling size, and one of the largest, in separate hills; and then put two and three and four in hills, where the land was equal—the result was, that the single potatoes produced the largest and much the best, but

not near so many in number of small size. I have made several other experiments, and quite enough. Upon examining a potato it will be found that each, whether large or small, has from six to ten eyes or sprouts; and if it be fair to calculate that each sprout will produce from six to ten potatoes, each potato will yield from 36 to 60 potatoes; which number is by far too great to be congregated in the circumference of a hill; the consequence is, a great proportion of them are small, and if more seed is planted, the greater the number of small ones, and less of large. This year I have planted about three acres, and upon one acre I put forty-four loads of coarse manure from my sheep yards,—the cart body somewhat heaped, say about thirty bushels to the load; spread it over the land and ploughed it in; then dragged, then furrowed at three feet apart one way only, and dropped the potatoes without sorting, the smallest as well as large, at about 2½ feet apart, and covered, and hoed them twice. I planted 18½ bushels seed. On the next ⅞ths of an acre, by the side of the first, I put twenty-five loads of manure, ploughed and furrowed as before, and dropped my potatoes single at three feet apart, planted 17 bushels seed and hoed twice. The third acre was ploughed and dragged and furrowed as before, and a shovel full of manure at about three feet put in each hill, in all twelve loads, and hoed them but once, the same sort of seed in all, which is called the Burr potato, of flesh color, and excellent for table use. The result is as follows,—the first acre produced 425½ bushels, the second ⅞ths of an acre produced 250½ bushels, and the third acre we have not completed the digging of, owing to the constant rains for the week past; but we have dug a part of them, perhaps one fourth part, and in such a way and places as to ascertain with a good degree of certainty, that this acre will not produce over 160 bushels.

I have also raised one acre of ruta baga, which now promises a large crop. They are not sufficiently grown to pull, therefore I cannot ascertain the quantity. The land was well fitted by putting 20 loads of manure upon it, before ploughing, then by spreading five loads of leeched ashes and one load of un-

leeched. I have strong hopes of a very large crop, although I do not consider it a very valuable one. I have also raised four acres of corn upon land on which I had corn last year, fitting it by putting 17 loads of manure to the acre, by dunging in the hill. The four acres, which I have measured accurately, as well as my potato lands, have produced 450 bushels of ears.

I have ploughed and sowed five and a half acres of winter rye, or thereabouts, and two acres of winter wheat upon the land upon which I have raised potatoes. This I have fitted, and intend to sow this day.

In addition to the above, I have let out about nine acres of land to be sowed to oats, on shares, or for one half, and for which I have received 1347 sheaves. I have also let out about 4½ acres, which have been planted to corn, in the same way, or for one half, and had it dunged in the hill. This is a fine crop, and not yet harvested; besides about 1½ acres more for buck wheat and potatoes. The land on which I have raised my oats, I have seeded down to clover and grass seed principally.

The number of apple trees in my orchard is 149, and I have several others scattered over the farm. Seven years since I put in 1000 grafts by contract, principally of winter fruit, such as greenings, spitzenbergs, gilliflowers, russets, golden sweetings, and seek-no-further, &c., of which I have a great abundance this year; but owing to the incessant rains for a week past, I have not been able to gather them. I shall have probably between 100 and 200 bushels. I have cider apples, and a great supply for family use, enough probably to make 40 or 50 barrels, which I do not usually make until some time in October, and have not yet done it. My manner of making cider is the common one.

As to sowing grass seed, I usually seed down about ten acres annually with four quarts of clover, and four quarts of herds grass to the acre, which I consider a plenty for mowing land. I have made several experiments. After taking off a corn crop, I have ploughed and sowed nothing but grass seed; this was done in the month of October, and it

took well, but did not get to maturity fully the next season. I have also sowed with rye in the fall, and also upon snow covering wheat and rye, and also in the spring with spring wheat, rye and oats, and I am satisfied that to sow clover and herds grass in the spring with oats, is the best time and way.

My barn is 100 feet long and 40 feet wide, standing east and west, with a floor through it lengthwise, over which is another floor, each 12 feet wide. Upon the south side of my barn I have a tier of stables extending the whole length, 12 feet wide, which is sufficient to put up 25 head of cattle. I have one shed extending from the west end of my barn south 120 feet, half of it 20 feet wide, and the other half 14 feet, capable of holding 30 or 40 loads of hay over head. I have three or four other temporary sheds of less value. My barn yard is 120 feet square, divided by a line of fence through the centre each way, making four yards of about sixty feet square, with a shed for each, and a well of water in the centre, from which I water each. In each of these I have wintered about 100 sheep, and make my manure principally by bedding them with straw. Of my sheep, I have now about the same number as last year, 430, having disposed of nearly as many as my increase by lambs. I sheared 350, which produced 851 lbs. of first quality wool, sold for 75 cents per lb. I raised only 84 lambs, in consequence of a severe rain storm the first week in May, which is the time I usually have them yeaned. I lost a considerable number. I keep them in separate flocks, and feed them in winter out of boxes prepared so that they can put in their heads on either side, and not waste the hay. This business of growing wool was my principal object in farming; but the low price the wool has brought for three or four years past has almost wholly discouraged me. I have been disposed to reduce my flock about one half, because I could not grow the wool for the price it has brought. This year, however, it has brought a fair compensation for growing. My sheep are first quality merino and Saxony, the fleeces light. I have kept only two yoke of oxen, three cows, and three horses. From my cows, which are of the first quality,

we have made butter only enough for family use. Of swine, I only keep and fat enough for family use, and some little surplus to pay laborers. I am now feeding six of the Byfield breed, which I intend to make weigh from 300 to 400 lbs. each. I have one that will now weigh more than four hundred. I make my pork by boiling potatoes the fore part of the season, then pumpkins, provender and corn.

In addition to my crops, I shall have probably thirty bushels of English turnips. I have a large garden, in which I put out 1000 cabbage plants—have raised six and a half bushels of onions, a great supply of beets, parsnips, carrots, winter squashes, besides water-melons, musk-melons, cucumbers, &c. I have ten peach trees, ten pear trees, and about 100 filbert bushes, which have all borne finely, except peaches, with which I cannot succeed here at all. As to amount of labor, I have had but one hired man for six months, to whom I paid ten dollars per month, or sixty dollars. I have two boys, almost men, belonging to my family, besides my own labor. I have paid for day laborers, according to my account, sixty-three dollars and fifty cents only. You will notice the amount of labor performed with little help, and little expense; but I have yet considerable more to do,—I have yet to cut, I think, more than ten loads of rowen hay, and intend to sow a number of acres of late rye. Having made no cider the last year, I made trial of molasses and water, but all would not do, I was obliged to furnish a little ardent to my day laborers to get through haying and harvesting; the precise quantity I do not know, but I think it would not amount to more than twelve or fifteen dollars. To recapitulate,—

58	acres of meadow	mowed and produced	129	loads hay.
20	do. of rye	produced	4568	sheaves.
3	do. winter wheat	do.	911	do.
14	do. oats	do.	3080	do.
2	do. spring rye	do.	601	do.
2	do. marrowfat peas	do.	12	bushels.
1	do. buck wheat	do.	17	do.

2	do. white beans,		
3	do. potatoes	do.	836 bushels.
4	do. corn	do.	450 do.
5	do. ruta baga	do.	500 by estimate.
15 acres let out on shares, the produce not yet ascertained, except			1347 sheaves of oats.

The residue of my farm is wood and pasturage.

In this statement I believe I have not overstated or over-rated any item; and I am inclined to think that my corn, which we completed last evening, if accurately measured by stricken measure, would hold over something like a half of a peck to the basket, which we heaped.

I am, dear sir, very respectfully, your
obedient humble servant,

JONATHAN ALLEN.

Berkshire, ss. Pittsfield, Sept. 29, 1831.—Then the above named Jonathan Allen personally appeared, and made oath that the foregoing statement by him subscribed, is, according to his best belief and knowledge, true.

JOSHUA DANFORTH, *Justice of the Peace.*

REPORT OF THE COMMITTEE ON EXPERIMENTS, DISCOVERIES AND INVENTIONS—TREES, LIVE HEDGES, &c.

The Committee of the Massachusetts Society for promoting Agriculture, to whom were referred claims for premiums for experiments, inventions, and discoveries, as also for plantations of forest trees and apple trees, and other descriptions of agricultural industry, as specified in their list of premiums, beg leave to report; that there were no premiums claimed for experiments in turning in green crops as manure, nor for the successful use of the drill plough, in the cultivation of any small grain or seeds; but there were two claims for the third premium offered by the Society, under the head of experiments, inventions and discoveries; viz. For an effectual and satisfac-

tory mode of *destroying* the bee-moth, or of *preventing* its ravages. It will be obvious that the two branches of this subject are essentially distinct. To *destroy* the moth by any artificial process, is radically and substantially different from *preventing* its ravages, or its access to the hive. Both would be equally useful, if the end should be obtained, which is protection; but it is obvious that the means may be, and (we may almost say) *would* be essentially different.

The first communication received on this interesting but difficult subject by the Committee, was from the venerable Dr. James Thacher, of Plymouth. This paper was worthy of the good sense and well known research of the author, and did not in any degree diminish the respect which the Committee felt for this veteran promoter of all the arts subservient to the cause of agriculture. In examining it, however, with the care and exactness which their commission required, they could not perceive that it fulfilled the conditions, on which alone their authority reposed, to wit, "an *effectual* and *satisfactory* mode of *destroying* the bee-moth, or of preventing its ravages.

The Committee might rest here, and rely upon the conviction, that they had exercised their judgment with due discretion; but they owe it to Dr. Thacher, and to the public, to state the grounds on which their opinion was founded. As to the first branch, Dr. Thacher seems distinctly to admit, that he knows of no "*effectual and satisfactory*" mode of *destroying* the bee-moth, and seems to consider it as a desideratum not yet obtained. He does indeed suggest the idea of destroying the bee-moth by solutions of sugar with poison; but, besides that the same remedy may be equally fatal to the bees, it must be in its nature imperfect.

We have no evidence that the bee-moth has so strong a desire of food, as to counteract the more powerful influence of its instinct, to place its eggs in places adapted to its future progeny. In short, though it is the suggestion of an ingenious mind, employed in speculations for the public good, yet as to

its "effectual and satisfactory operation," there is too little evidence offered.—Upon the second branch of the premium, that of prevention, Dr. Thacher proposes an inclosed apairy. There is no doubt that an enclosed apiary forms some check to the ravages of the insect. But then it should be considered, that apiaries thus inclosed have been in operation for thirty years past, and have proved neither "effectual or satisfactory."

Dr. Thacher indeed alludes to a grating placed before the hives at night, but gives no definite mode of applying it. This remedy is much more fully developed in the next communication. Though we are compelled to say that Dr. Thacher has not afforded an "effectual and satisfactory" mode of preventing the ravages of the bee-moth, yet for his continued labors and research on this interesting subject, the Committee recommend to the Trustees that a gratuity of ten dollars be paid to him.

The only other communication on this subject, is from the Rev. J. R. Barbour, of Newbury, (Byfield.)

This communication is very elaborate, interesting and important, shewing great perseverance, accuracy, and uncommon practical observation, as well as mechanical contrivance. It would be impossible for the Committee to do any thing like justice to the plans and suggestions of Mr. Barbour, in any abstract which they could make, and they would therefore recommend that the whole communication from him, together with the letter of Mr. Parsons which accompanied it, should be published in the Journal and New-England Farmer. This great advantage would be derived from it, that if the Committee have erred in their opinion as to its title to the premium offered by the Society, ingenious persons may be induced to try his plans, and experience may show that the difficulties which present themselves to the Committee are not well founded.—Mr. Barbour's communications have reference to two distinct points.

The first, to the prevention of the ravages of the bee-moth —the second, to the more easy and effectual acquisition of the labors of the bee, without their entire extermination. As no

premium has been offered for this, the most interesting part of Mr. Barbour's discoveries, we might pass it over in silence ; but such a course would not suit either our feelings, nor comport with our duties. We feel ourselves then bound to say, that Mr. Barbour's suggestions and plans appear to us to be very ingenious and important, and we recommend them to the attention of those who cultivate bees,—and as a proof of our estimate of their ingenuity, we recommend to the Society, to pay to Mr. Barbour ten dollars, being the half of all the premiums offered on this subject, and that he be requested to permit his apparatus, transmitted to us, to be exhibited in the Agricultural Repository in Boston, under the management of Mr. Newell. The other branch of Mr. Barbour's inventions, or claims, respects the prevention of the entrance of the bee-moth into the hives, by a screen of millinet, to be put up every evening, and to be removed every morning. Such a remedy would appear perfect.—Why then not grant the Society's premium ? We reply in few words. First, because Mr. Barbour has the candour to admit, that the suggestion came to him from the Rev. Mr. Noyes, of Needham. We are not told how far this suggestion went, but we are led to believe that Mr. Noyes was the inventor. Secondly, because we seriously doubt, whether a remedy, which requires attention twice a day, is fitted for common use. Yet as the first suggestion of a mode, said to be effectual, if men will be scrupulous in its application, came first before the public through Mr. Barbour, we recommend the grant of a gratuity to him of ten dollars. But in this gratuity, justly due to an ingenious man, who has devoted his time and learning to a subject very interesting to the cause of agriculture, we are constrained to say, that it is not certain at what hour the bee-miller takes its flight. An omission of one half hour may be fatal. If, as is asserted, and as is probable from analogy, a single miller lays 500 eggs, it may prove as fatal to a hive, as if there was a free intercourse.

We admit that these precautions, sedulously and scrupulously followed, might be effectual. But it should not be for one

moment admitted, that as a general, or universal practice, it would be available.

The next application which has been made for a premium, is for an effectual and satisfactory mode of extirpating the worm which attacks the locust tree. The only applicant for this premium is William Bacon, Esq. of Richmond, Berkshire county. The experiments of Mr. Bacon are exceedingly interesting, and we hope that others influenced by his example will pursue the same course. There can be no doubt that the cautious stoppage of all the apertures, by which the locust borer either enters or makes his exit, would materially lessen its depredations; but our objections to granting a premium for this discovery are, first, that he had disclosed his discovery (if it be one) to the public in the New-England Farmer, vol. ix. No. 3; and it was not the purpose of the society to grant premiums to persons who, from enlightened and liberal views, had already disclosed their discoveries.

Secondly, they can perceive little distinction, between Mr. Bacon's experiments, and those of General Dearborn, long since given to the public on the same subject. Lastly, extensive experiments by some members of the Committee have satisfied them, that no local application to the *root* or the stems, or lower branches, can be, in any important degree, a protection against the borer of the locust-tree, which chooses in preference the young branches of the present year's growth.

The Committee feel the great importance of procuring a remedy for this deplorable evil, which deprives the State of the most valuable of its forest trees, so important in naval architecture. Scarce any sum would be too great an expenditure, which would banish this destructive insect, as our climate is as favourable to the culture of the locust tree as that of the Middle or Southern States; but a knowledge of the ravages of the insect, brings them to the conclusion that the remedy proposed by Mr. Bacon, is not so *effectual* or *satisfactory* as to justify them in awarding to him the Society's premium, though

he merits their thanks for his experiments, and the laudable spirit which gave rise to them.

The only regular, and certainly the most meritorious application for premium, "on the best managed apple orchard," was Captain John Mackay's, whose mode of treatment is set forth in the subjoined communication.

His orchard in Weston, was visited, and carefully inspected. It is on a side hill, with a gradual descent inclining to the north.

The soil is a heavy dark loam, originally very rocky. The trees (about one hundred and forty in number) cover about three acres of ground. Their distance from each other is two rods. The trees, it appears, were set out partly in the spring of 1823, and partly in the spring of 1824; the ground, having been previously ploughed, was kept up till 1827. Since then, they have been hoed round twice a year. Their appearance was certainly very thrifty, with a smooth bark, and every indication of careful attention. Their measurement was generally from twelve to fourteen inches.

In noticing Mr. Mackay's method, it cannot be doubted, that a slight movement of the surface, oftener than he practised, would be expedient, even four or five times a year, as having a tendency to discourage weeds, and the encroachment of the grass sward, as well as to facilitate the passage of the dews and showers to the roots; whilst the aggregate labor would be little increased thereby.

That this should not have forced itself into observation, can only be accounted for, by the fact, that in the use of ashes, the invariable production of weeds, consequent on the application of barn manure, was avoided. It may be doubted also, whether the stimulating principle in the wood ashes, to the extent of one peck to a tree, every other year, was the best course of procedure. The process of vegetation is gradual, but constant and never ceasing. The means of fertile growth, therefore, should be in reference to this order of nature. An annual dressing seems most fitly to conduce to the mixture and enrichment of soil, the process of fermentation, and the best sup-

ply for vegetable growth. It would therefore follow, that a supply of a less quantity, annually afforded, would be better, and safer, as the danger of sudden excess, often injurious, would be avoided. To what extent ashes, or other stimulating principles, may be applied, can only be determined by careful experiment: that the former has been recommended, and used to advantage of late, by many cultivators, is well known. Many too suppose, that the volatility and pungency of their salts are offensive and discouraging to the approach of the borer, and all insects, vermin, &c.

The general result, from personal examination made by the Committees on premiums for the best managed apple orchards in this vicinity, for several years past, have most satisfactorily evinced, how invariably, in eight or ten years, an orchard may, with proper attention, be brought forward from the seed into good bearing. The practices, in which these skilful cultivators appear to concur, may be briefly stated. First, to be careful not to set the tree beneath the upper stratum of earth or black soil. To go deeper is to insure the canker and a diseased condition. In a light soil, a burrow or two of stones, beneath the upper stratum, prevents the passage of the roots into a poorer soil, whilst it supplies moisture, when most needed; and artificially, in part at least, affords that advantage for which a rocky soil is invariably distinguished. Secondly, to have the land previously ploughed, and kept up for two or three years, taking care not to disturb the roots. After this, the land may be laid down to grass, and the surface near the trees occasionally slightly stirred, to prevent weeds, and give a more ready passage of air and water about the root. Thirdly, about eight shovels of compost manure, or five or six quarts of ashes, may be put to advantage at the root, and spread about in the Spring.

To keep an orchard in a good bearing state, when it is deemed inexpedient to plough from a fear of injury to the roots, the land should be kept in good condition from frequent top dressing.

As to the applications to the body of the tree for a defence against vermin, &c., the subject is in a course of experiment.

The rubbing with a coarse cloth with soap and sand, and a wash with waste soap suds, appears both beneficial and economical.

A wash also has been in use by many, and it is highly recommended by the Messrs. Winships, "as preventing the destructive effects of the borer, killing the moss, and destroying other insects which injure the health of the tree, and giving vigor thereto. We recommend, say they, one pound of potash to three quarts of water, to be laid on with a brush.*

A coat of lime and cow-manure was used by Mr. Mackay, mixed with clay, one third each, brought to the consistency of a suitable wash to be applied with a brush. This is in frequent practice, and has been thought well of, as discouraging to insects. It may be a proper consideration, whether in the use of materials on the bodies of trees, in washes, there has not been some excess?—Can the color of the bark be so unnaturally changed to a yellow hue, without injury? Or is the effect so superficial as not to deserve regard?

Although the Committee do not feel authorised upon the principles which guide the Society, to recommend that a premium be awarded for this brief communication, they yet, for the presentation of this important subject to notice, with the degree of care and skill evidenced by the thriving condition of his orchard, recommend that a gratuity be paid to Captain John Mackay, of twenty dollars.

In the visits made to several successful and highly skilful cultivators of the apple orchard,† it was lamentable to observe that in most situations the borer had made his deadly visits. As a preventive, lime at the root has been recommended.

* See Mr. Wheeler's communication in the New-England Farmer, vol. iv. page 348; also Messrs. Winships', vol. viii. page 234.

† The orchards of C. Davis, Esq. Roxbury; A. Baldwin, Esq. Milton; Col. Phinney, Lexington; Mr. Harding, Waltham, and Mr. Crosby, of ———, all of which indicated most skilful management.

But the insect goes higher up. Some of our Trustees have cased about the stem some way up with lime mortar; but here the same objection applies, and nothing short of a complete envelopement of the trunk would seem to be wholly effectual.

In closing their report, the Committee are aware of the motives which induced the Society to lessen the frequency of Cattle Shows, with a view of applying the funds to certain objects in agriculture, which recent discoveries in science and the arts have made interesting.

It is with regret, therefore, that they are obliged to state that notwithstanding the offer of the whole income of the funds of the Society, as well as what arises from the liberality of the State, they are not able to present to the public more multiplied experiments on the various subjects submitted to them.

The ploughing in of green crops is important, and occupies much attention abroad.

The subject of live hedges must in many parts of the country become prospectively important, so also the ingenuity of our manufacturers might present many improved implements of agriculture. To all of which subjects attention was invited, and liberal premiums offered.

The novelty of the mode may perhaps in some degree account for this, and the Committee can only hope that our intelligent husbandmen may more readily show forth their good practices, for which it is well known many of them are so distinguished.

By order of the Committee.

Boston, Jan. 14, 1832. JOHN WELLES, *Chairman.*

BEE-MOTH.

The best method of destroying the Bee-moth, or preventing its ravages among Bees.

The whole tribe of moths and butterflies propagate their species by eggs, which the females deposit in situations and substances, in which the offspring caterpillar may find its appropri-

ate food the moment it is disclosed. The female moth is endowed by the all-wise Author of its existence, with a most wonderful sagacity and skill, in anticipating the wants of the young grubs, when they escape from the eggs, and have no mother to direct or provide for them. The numerous species of moths and butterflies seldom live more than a few days after depositing their eggs for a future progeny. The period at which the eggs are hatched after deposition, depends much on the temperature of the atmosphere; by exposure to the cold of an ice-house in summer, the hatching may be retarded, as it may be hastened by a heated atmosphere in winter or Spring. In general, the eggs of moths remain locked up during winter, in the secure spot which the mother insect had selected, and are hatched into grubs or worms by the genial heat of Spring.

The silkworm moth, when unrestrained in its natural habits, deposits its eggs on the leaves of trees, and carefully glues them to the leaves, that they may not be shaken off by the wind or washed away by rains; and the larva, as soon as disclosed, finds its nutriment in the leaf by which it is sustained. The moth that produces the caterpillar (*Phalæna Neustria*), and that which produces the canker worm (*Phælana Vernata Peckii*), attach their eggs to the branches of fruit trees, that the ensuing vernal heat may bring the young brood into existence, where they find their food in the buds and leaves just expanding. The moth, from which comes the worm called the borer, and the insect from which proceeds the peach tree worm, deposit their eggs on the bark of trees, that the larva may penetrate into its substance for support. The mischievous curculio stings the young fruit, and deposits its eggs where the young maggot will find its nutriment, and at the same time its vehicle to convey it to the earth for a more permanent residence. The diminutive moth, whose progeny preys upon woollen cloth, selects that article as a nidus for her eggs. To these instances numerous others might be added.

The true bee-moth, according to Dr. T. M. Harris, the *Phalæna Tinae Cereanea* of Linnæus, is a native of Europe,

but has been introduced and naturalized in our country. This insect makes its appearance in April or May, according to the warmth of the season, and continues its depredations among bees till October. It appears in the form of a small miller or nocturnal butterfly, the same that we see fluttering about our lights in a summer's evening. It is smaller than a bee, of a greyish colour, paler towards the head, glossy brown or purplish near the outer margin of the wings. They have four wings, but seldom soar high in the air; they are frequently seen attached to some substance, apparently motionless, but on the approach of danger they instantly leap off with great rapidity. These pernicious insects discover a peculiar disposition to molest bees, and propagate their species in bee-hives. They lie concealed in the grass during the day, and effect their mischievous purpose in the night; when, by the aid of a light, they may be seen in great numbers, hovering about the apiary, to which they are allured by the sweet odor from the hives. The female moth makes every effort to deposit her eggs within the hive, but failing to find admittance she lays them about the lower edges and crevices as near the entrance as she can, and it sometimes happens, probably, that they are carried into the hive by the legs of the bees. The eggs are, according to the course of nature, hatched into caterpillars or worms, having sixteen feet and a reddish head. These creatures soon wend their way into the hive, and not unfrequently they have been known with their strong jaws to cut a channel of their own size through the substance of an inch board, to obtain admittance. These worms, when arrived at maturity, construct an oblong oval pod or cocoon, in which they envelop themselves. In this situation they continue to enlarge and extend their covering, leaving an opening for the head; and while in their armor, thus formed, they are perfectly secure from any annoyance from the bees. They feed on the wax and comb, devouring and gnawing down the cells which contain the eggs and the young bees, until they are wholly destroyed. At length the caterpillars are changed into a chrysalis state, their bodies are con-

tracted within their cocoon, they cease to feed, and in due time are transformed into a winged insect, the true bee-moth. Here the insects continue to increase in numbers, till the whole order and economy in the domicil is interrupted; and the bees being overpowered, either die, or in despair quit their hive to the enemy, the first or second year of their attack. The moths disclosed from the cocoons seek an exit from the hive, when they couple, and the females having deposited their eggs in a suitable nidus, soon perish, leaving in the hive in autumn a numerous progeny to be transformed into their perfect state in the ensuing spring. The moths thus transformed pursue the same train of actions to propagate the species, which had been pursued by the parent insects of the preceding year, and it is not improbable that two or more generations are reared in succession the same season. These destructive insects are more prevalent in some local situations than in others; in some places the stock of bees is entirely annihilated, and all attempts to cultivate them are abandoned. The female moth is remarkably fertile, laying 400 or 500 eggs in a season. The precise time when the female deposits her eggs, and the time required for their hatching, has hitherto eluded my research, but I have known moths to appear early in April, and at one time have seen a worm thrust out of a hive by the bees in the month of March. The process both of hatching and transformation, is promoted by the heat within the hive. There is always in the hive with the moths and grubs a quantity of web resembling that of the spider, the use of which, as I conceive, is to entangle the eggs, to prevent them from being spread abroad and lost, and to serve as a sort of cradle for the young grubs. About the middle of May 1828, I perceived on the floor-board of a hive, a mass of web in which were numerous grubs, from the size of needles' points to that of half an inch in length. When this web is observed in or about a hive, it may be certainly known that the hive is infested with the insects. I enclosed a number of the full-grown caterpillars in a box for experiment. They immediately spun their cocoons, in which they enveloped themselves, and in this chrysa-

lis state they remained till July and August, when they made an aperture with their head, through which they escaped, and, expanding their wings, launched into the air. Thus the disgusting caterpillar, which so lately crept on sixteen feet, now is seen to fly with that gracefulness and ease peculiar to the butterfly, one of the most elegant and active of the winged insects. Here we may recognize the Deity in his wonderful works!

In October, 1830, I took from a bee-hive which I purchased, about twenty cocoons containing chrysalis, put them into a box glazed on one side, and kept them in a moderate temperature through the winter. In the months of July and August they were transformed into winged moths, a part of which were double the size of others, probably designative of the different sexes; but I was surprised to observe one among them a beautiful snow white miller.* I put a quantity of honey-comb in the box, with the hope of procuring a nursery, that I might be able to discover their habits and mode of propagation; but they survived but a few days.

Methods by which the Bee-moth may be destroyed.

The extermination of this destructive species of insects is absolutely impracticable, by any means that art can devise; but their number may be considerably diminished in any local situation, and their ravages among apiaries may be entirely prevented. Bottles, with a little honey or syrup at the bottom, placed near the hives, will entrap multitudes. If open shallow vessels, containing a mixture of sweetened water, to a pint of which a gill of vinegar be added, are placed within their range, they will be enticed to sip the liquor, by which they will become intoxicated and drowned by hundreds. They should be burnt the next morning, lest by the heat of the sun and air they become resuscitated. If lights were placed near the hives, a still greater number would be allured to the traps, where they may be destroyed. When these insects have got possession of a hive, they cannot by any means in our power be expelled; the only

* Probably another insect of different habits.

remedy consists in the removal of the bees into another hive. It would be preposterous to suppose that any article could be applied to the insect, while in its cocoon in the interior of the hive, that would effect its destruction. Common salt has been recommended, but I have enclosed the worms in a box containing marine salt, and they have covered themselves with their web, and remained there about six months, when they were transformed into the miller. I have put them into a solution of alkaline salts, and even potash, and they have escaped with impunity.

Knowing, therefore, the inutility of all our means to effect the destruction of the bee-moth, it only remains to describe the most effectual expedient to prevent its ravages among our apiaries.

A proper understanding of the instinctive habits of the female moth for the propagation of her species, will indicate the most successful mode of procedure. It has been already observed that the female selects an appropriate situation as a nidus for her eggs: she discovers a partiality for the floor of the bee-hive, anticipating the sweets of its contents for her dainty offspring. Secluded from the interior of the hive, she deposits her eggs about its edges and in crevices as near its entrance as possible, trusting to the instinctive faculty of her progeny to seek their way into the hive. From all my observations, I have not been able to discover that moths enter bee-hives by the common entrance. The bees have constantly stationed at their avenue a powerful and vigilant guard, and on the approach of a moth, a mutual alarm and commotion is observable, and the assailant is soon obliged to retreat. In locations, however, where moths are very numerous, they may out-general their opposers, and obtain an entrance. From the foregoing considerations it must appear obvious, that the only effectual method to secure the hives from the ravages of the great enemy to bees, consists in a close house, to seclude them from all access. This unquestionably affords the only defence, and combines all the requisite advantages. From three years experience, I can affirm that this plan

has answered my full expectations, and I can rely upon it as a perfect security. I have no reason to suppose that my apiary is in the least infested with the insects. The form and dimensions of the house which I have found convenient, is in length proportioned to the number of hives which it is to contain. The width is about 18 inches, and the height about two and a half feet for a single tier of hives, with a roof slooping in front. The front part should be entirely closed, having apertures at proper distances to correspond with the mouths of the several hives to be placed within. The outlet from the hive, and from the house, should be a little sloping downwards, that the bees may with greater facility remove obnoxious substances, and be better enabled to defend themselves against their enemies. The whole wall on the back part should consist of doors furnished with hinges and fastenings. The house is to be placed on posts about two and a half feet high, set into the ground, and secured from being turned over by the wind. The doors may be shut or left open in the day, as circumstances may require, both winter and summer ; and if thought necessary, a grating may be placed before the avenue at night. Instead of the house just described, the hives might be placed in an upper apartment in an out-house, and the height from the ground would afford additional security against the moth. As a further precaution, it may be recommended to whitewash the front of the house, and the floor-board, which should also be changed frequently.

I subscribe myself the Committee's very humble servant,

JAMES THACHER.

Plymouth, October 30th, 1831.

[To the Trustees of the Massachusetts Agricultural Society.]

GENTLEMEN—With this is forwarded, for your examination and disposal, the model of an Apiary, designed to guard the bees within from the bee-moth. The distinguishing principle of this apiary is, that with the aid of frame doors, covered with millenet, the miller is effectually shut out of the house, while the bees are not at all injured from the want of air. For the principle,

I acknowledge myself indebted to the Rev. Thomas Noyes, of Needham. I will describe the apiary as built for two Charlieshope hives. It may be made longer, so as to admit any number of hives.

1. Two planks, 5 feet and 3 inches in length, and 1 foot and 8 inches in width, are placed perpendicularly in sills 6 feet in length. These planks form the two ends of the apiary.

2. The length of the apiary for two hives should be 4 feet outside. A partition board in the centre divides the house into two apartments, 21½ inches wide.

3. The roof is double, and made to be put on and taken off at pleasure. It is fastened with four iron pins, and at each corner. It must be taken off, in order to put in or take out the hive.

4. The bottom, or floor, is inserted 4 inches from the sills.

5. In the back, two doors are inserted against each apartment. The upper door is for the purpose of examining the bees through the glasses in the hive. The lower for admitting a free circulation.

6. In front the apiary is boarded down within 18 inches of the bottom. A *cant* is here inserted, 8 inches wide, to throw off the water. The space below is filled with a movable frame, covered with millinet—to be put in a little after sundown, and removed before sunrise, through the miller season. Parallel bars are inserted in each apartment between which the hive stands.

In the model, the cedar blocks represent bricks, on which the sills stand. There are holes in the ends of the sills with pins, which are to be driven into the ground, that the apiary may stand perfectly firm.

With the model of the apiary I send also a model of the Charlieshope hive, and a model frame for the convenience of moving it.

REMARKS.

1. I think it would be an improvement in this apiary, to have the roof permanent, and the bar in the back movable, so that

the hive can be set in, or taken out, by simply removing the bar.

2. It is essential, that every part of the apiary be made tight; and that it may continue so, it should be well painted.

3. For two seasons I have used an apiary, not constructed after the model which I send you, but embracing its *distinguishing principle*, that is, the millenet doors; and am satisfied, that it is an effectual security against the miller.

4. The Charlieshope hive I think preferable to any other that I am acquainted with, in regard to its shape. But the Thacher hive is rather preferable in this particular—that of taking away the surplus honey. I have, therefore, made and used a hive combining the distinguishing principles of both; that is, having the wedge bottom, and drawers in the top. In some, I have two drawers, and in others but one, that being made to fill the whole space. I have glasses in the lower part, and also the drawers.

I am, gentlemen, your obedient servant,

J. R. Barbour.

Newbury (*Byfield*), *Nov.* 10, 1831.

[To the Trustees of the Massachusetts Agricultural Society.]

Gentlemen—Accompanying this, I forward, for your inspection and disposal, the model of an apparatus, which I have prepared, for the purpose of transferring bees from one hive to another, with water. The apparatus consists of the following parts, which, for convenience of description, I have named thus :—

C—Cistern, to receive the hive to be operated upon. It is 30 inches in height, and 20 inches square.

T—Tunnel, fitted on the outside of the cistern, to convey the water to the hive.

F—Follower, to rise and fall in the cistern. It has an opening ten inches square in the centre, covered, on the upper side, with sheet-iron slides. There is also, on the upper side, a set of handles. It is two inches thick on the sides, made sloping

on the under side, to the centre, in order to assist the bees in keeping out of the way of the water, as it rises upon them. On the opposite sides of the *follower* are fastened leather straps, an inch wide, with buckles with which to confine the hive to the *follower*.

R—Receiver, into which the bees are driven. It is 20 inches in height and 10 inches square, corresponding with the opening in the *follower*, to which it is fastened with cleets and buttons, and can be taken off, and put on, at pleasure. There is a set of slides at the bottom of the receiver, corresponding with those on the follower. In the top of the receiver is a chamber, to receive the bees that may happen to get into the water, and come out torpid. A perpendicular board, with holes in right lines in the centre of the lower room, serves as a support for the slides, and also to assist the bees to keep out of the water. A slide in the top, opens into the chamber. A partition slide opens a communication between the chamber and lower room. There is also a slide in the side of the receiver, at which to let out the bees into their destined tenement. Two panes of tin, 7 by 5 inches, with holes punctured, inserted in opposite sides of the receiver, serve to admit light and air.

Directions for using the above described apparatus.

1. Let the hive to be operated upon, be removed some distance from any other, and stand there long enough for the bees to become perfectly wonted to the localities of the place.

2. The evening (or some evening) before you design to operate upon the hive, raise it gently and place under it the follower, *bottom side up*—the slides being carefully closed and fastened.

3. In the morning, if the weather be warm and pleasant, stop the door of the hive, and with clean linen rags cork every place where a bee can pass out. With the straps confine the hive to the follower. With a gimblet bore six or eight holes in the side of the hive near the top to admit the water. As the comb

is usually put up in parallel sheets with a space between, it is best to have the water admitted into each space.

4. Take the hive thus prepared from the stand, and, by the handles upon the follower, set it gently into the cistern.

5. Take the receiver, with all the slides carefully closed, and place it upon the follower, and turn the buttons.

6. Draw the slides in the follower and the corresponding slides in the bottom of the receiver, and permit the bees to pass up. This they will be glad enough to do, when they perceive the water coming in upon them, which is the next thing to be done. Pour the water slowly into the tunnel until it overflows the slides in the receiver.

7. Close and fasten the slides of the receiver and take it off. Raise the hive from the water, remove the follower, invert the hive over the cistern, and a few raps upon it will bring out the bees that may remain in it in a torpid state. Perhaps a wing, or soft brush, may also be useful. With a common kitchen skimmer, take the torpid bees from the water, and put them into the chamber prepared for their accommodation. Draw the partition slide, and thus admit the wet and dry bees together. The heat of the family will soon restore the torpid ones to animation.

8. Take from the old hive pieces, (more or less as you may choose) of good broad comb, and put them into the hive designed for the habitation of your bees. This may be done by running a rod or rods through them.

9. Place the receiver horizontally upon the stand where the old hive stood. Set the new hive upon it, draw the slide designed for the purpose, and your bees will pass up, and joyfully take possession of their new home. If, however, they show any reluctance in regard to going up, apply a little water with a grape vine syringe, or with your hand, and they will soon yield to your wishes.

10. When the bees have all passed up, remove the receiver, and your work is done. Some special care, however, is necessary for a time in guarding them from robbers; as their cour-

age is, in a measure, prostrated, and their fighting propensities subdued, by the influence of cold water. It will be a month or two before they will be as prompt in self-defence as formerly.

Occasions in which this Apparatus may be useful to the Apiarian.

1. When he has a stock of bees infested with the bee-moth. As there is no way known by which to expel the moth, unless the bees can be removed to a new tenement, they must be sacrificed.

2. When the hive becomes old and decayed, and a new one is desirable.

3. When his bees are in an old-fashioned box-hive, or hollow tree, and he wishes to have them in one of the newly invented hives.

4. When, in the autumn, he wishes to take the honey from any hive, and yet save the bees. If he has a stock that is feeble, or not above mediocrity as to numbers, he can unite the two; and he will probably have in consequence one more new swarm the coming season.

5. When he has a stock that has become old, the comb thick, and black, and dirty, and the cells small, he can remove his bees to another habitation, and they will begin life anew; the same, for aught I can see, as a new swarm. This fact, however, can be satisfactorily tested only by further experience. My present opinion is, that it would be desirable to give bees a new and clean tenement to dwell and work in, as often as once in four or five years.

Origin of the Apparatus, and cases in which it has been used.

In April, 1830, I purchased a stock of bees, the best that I could get, but it was a very old one; the hive a clumsy box, and withal rotten, and what was worse, I soon found it full of worms. Believing that I should lose my bees unless I could get them into a new tenement, I undertook to transfer them into a Thacher

hive, according to the directions given in Thacher's interesting treatise on bees; that is, by drumming them out: I made three attempts without success. The last time, I said to the young man assisting me, (Mr. Sewell Dole, of this parish) that I might as well lose them one way as another, and we would see what could be done with water. Accordingly, we took a large tub, set the hive inverted into it, with the new one on the top, and filled the tub with water. The bees passed up. We then removed it to the old stand, having put a slide under to confine the bees. We put the torpid bees and a piece of broad comb into one of the drawers, and left them. This was done in the evening of May 20th, 1830. The next morning, by a little after sunrise, the bees were at work finely. In September following I weighed them, and found they had made 44 lbs. of honey and wax. August 12th, I procured and treated another old swarm in the same way; and another August 14th. But in all these operations there was one special difficulty; the difficulty of fitting the new hive to the old one, so as to confine the bees. Indeed we could not do it effectually. Many would escape. Of course we were constantly annoyed by their stings. Yet three things were proved,—1st, that water will expel the bees. 2d, that the honey is not injured or wasted by water, as the honey-cells, as soon as filled, are all sealed. 3d, that there is no danger of drowning the bees, as the few that were found in the water torpid were easily resuscitated. These facts led to the construction of the apparatus. It has been used with entire success in the following cases.

1. In June last, a part of the apparatus was used in transferring a swarm belonging to Dea. Isaac Platts, of New Rowley. They were in a hive larger than the cistern, and of course the cistern could not be used. The lighting board was nailed to the hive, the hive inserted in a hogshead, an opening eight or nine inches square sawed in the board, and as the piece cut out was removed, the receiver was slipped over. Water was then applied, and the bees passed into the receiver, and were

thence removed to their new home without difficulty. No person was stung during the operation.

2. Early in July, the apparatus was used in transferring a stock belonging to Mr. Ebenezer Steadman, of Newburyport. His hive was inverted the season previous, and an empty one set on the top, into which the comb from the old hive had been extended. The separation of the two hives exposed the operators to some stings; but when this was done, the transfer was easy. Mr S. informed me, a few days since, that his bees had done well, except that they had been annoyed by millers.

3. July 12th, I transferred a stock of my own. It was in a hive of common dimensions, and the transfer was entirely easy. A number of friends were present, and some children, but no one received a sting.

4. In the early part of September, a part of the apparatus was employed in transferring a swarm on the farm in this parish, belonging to Gorham Parsons, Esq. of Brighton. This swarm, the season previous, had taken possession of the roof of the apiary, and commenced building their comb. Mr. Parsons built a box around them, which they had entirely filled. They were removed in this manner: the apiary was inverted, and stiff clay placed around the box containing the bees, so as to make it water tight. An opening eight or nine inches square was then sawed into the bottom board, and the receiver set over it. With a tin tunnel the box was filled with water, and the receiver removed. When the box was taken in pieces, $\frac{19}{20}$ths of the bees were found within in a torpid state. This was owing to a board, unknown to the operators, lying nearly parallel with the bottom of the box, which completely blocked up the passage of most of the bees. They were however carefully collected and put into the chamber of the receiver, and soon revived. There is reason to believe that the queen was drowned, and put into the chamber wet and torpid along with her subjects, for the bees gathered into the chamber, nor could they be induced to leave it until the next day. Then by setting the receiver upright, drawing all the slides, and thereby letting in the light

and air, they left the chamber, and took possession of their new tenement. They immediately commenced building their comb, and worked well for a fortnight, when they were attacked by robbers, and destroyed.

5. A lady (Mrs.Kent) in my parish, having a swarm which she was expecting to smother for the sake of their honey, was induced, from motives of humanity and personal kindness, to present them to me. September 20th, I rode to her house before breakfast, took the bees into a receiver and brought them home, and united them with the stock which I transferred July 12th. The union was effected by setting the hive upon the receiver and drawing the slide. Nor did the tenants of the hive refuse them the hospitalities of their house. Professional duties called me away immediately after breakfast, and I did not return until evening: so that I failed to witness the battle of the queens, if there was one. When I returned, every bee had gone up, and all was perfectly still. Mrs. B. had watched them quite attentively through the day, and saw no signs of contention among them at any time. Both swarms were old, and rather small, but united they make a fine stock.

Miscellaneous Remarks.

1. I am somewhat at a loss to determine at what season of the year it is best, on the whole, to transfer bees. Several things are to be considered. If you transfer a stock early, say in May, they will "begin the world again" the same as a new swarm, having the whole of the honey season before them. But in this case you will destroy many young bees, partly grown, and lose a swarm which they would probably have thrown out if they had stood undisturbed until July or August. Yet if they stand thus long, you may probably get a new colony; but the old one, if it is then transferred, must be liberally fed. This point is clear, that no swarm ought to be disturbed after the middle of June, unless the owner is willing to be at the expense and trouble of giving them back 25 or 30 pounds of the honey taken away, or some other. But if a stock is

much infested with worms, it is best, I should think, to transfer it at any time, even as late as October.

2. I have found the Havana honey to be a very cheap and excellent thing to feed with. As it is usually candied, I take it, and put a little water with it, and set it by the fire until it nearly simmers. This dissolves all the sugar particles.

3. In feeding, special care must be taken that the bees do not get into the honey, and perish. There are two methods which answer the purpose entirely. One is, to pour the honey slowly over dry comb until the cells are full, and no more. The bees will take it out of the cells without getting into it. The other is, to make a wooden dish perfectly true, with a very thin floating wooden cover, having many holes in it. Put the honey into the dish, and the bees will extract it through the holes.

4. In feeding, special care should be taken to keep away the bees of other hives. For this purpose, make a tight box of the size of your hive, and 6 or 8 inches deep. Let there be a hole in the top large enough for the bees to pass up and down with facility, and a door in the front side. Set the hive on the box, and at the door put in your comb upon a plate. The bees will pass down and carry up the honey, and lay it away for their winter's store. It is best not to open the box except in the evening, or early in the morning, lest other bees should find the honey, and be tempted to rob the swarm you are feeding.

5. As to the time of feeding, it is best to commence immediately after your stock has been transferred, even if it is in August or July. I am satisfied that none of my bees the two past seasons gathered honey enough to live upon through the months of July and August. In September they did better. And further, when a stock has been transferred after the honey season is past or nearly so, finding themselves reduced to a state of entire bankruptcy, and little or no business abroad to be done to repair their broken fortune, they settle down in heartless despondency, and die. This is not theory, but fact. The middle of August, 1830, I transferred two swarms,

as already mentioned, and left them to take care of themselves, expecting that they would get their living for a time, and something more. But they were dispirited and inactive; and before I was aware of it, one halfor t wo t hirds of the bees in each hive were dead. I then united the remnants of the two stocks, but it was still a dispirited colony. Some time in the early part of September, I began to feed them. This at once threw life and animation into the hive. They carried up 15 or 20 pounds, and upon this they lived through the winter. Many more of the bees I lost in feeding, by their getting into the honey, before I had learned how to prevent it; so that my stock came out very slender this spring. But they have done tolerably well this summer.

The stock that I transferred July 12th of the present season, and to which I united another, September 20th, as already stated, I commenced feeding immediately, and fed them as often as once or twice a week until the union. From that time to the present, I have designed to give them daily all the honey they would carry up, which has been about 30 pounds. They have, therefore, been vigorous and active all the while, and are now well furnished for the winter. If I transfer another stock after the middle of June, it is my design to give them daily all that they will eat and carry up for the rest of the season. As I use the Charlieshope hive, I should like to have a stock fill the lower apartment with this cheap honey. They would make so much the more in the boxes the ensuing season, that I think it would be good economy.

I am gentlemen, your obedient servant,

J. R. Barbour.

Newbury (Byfield), November 10, 1831.

P. S.—I have thought, that it would be interesting to the Trustees to peruse a letter which I received from Gorham Parsons, Esq. of Brighton, giving a particular account of his success in using my apparatus. I therefore send the letter along with this communication.

In reading Mr. Parsons' letter, I am reminded of one thing on which I have not spoken. It is in regard to the number of bees destroyed in transferring a stock. I would say then, that in removing them from a common hive, you need not lose *any*, except such as may happen to get maimed in some of the operations. The *water* will not kill them. It only renders them torpid. Heat will reanimate them. Hence the necessity of taking a warm pleasant day for the operation.

BRIGHTON, SEPT. 1st, 1831.

DEAR SIR,—I availed myself of the liberty you gave me when at Byfield, and applied at the New-England Farmer office for your model of the apparatus for removing bees from an old or defective hive to a new one. It was readily delivered to me, and I had a cistern and receiver made of the proper dimensions, conforming to the model, which I have since returned in the same good order as when received by me, and I beg you to accept my thanks for the loan of it. I made use of my apparatus soon after it was made, and the paint dry, and have succeeded so well, that I feel bound to communicate to you the particulars, which are as follow, and by which you will perceive whether I followed the directions you gave me. On the 19th of August, I commenced with an old square hive, with five glasses on the top, in each of which the bees had made more or less comb. This swarm was put into the hive in June, 1827, and had performed well till this season; and this was the only hive I owned that had not given me one or more swarms this season; from four hives I had six swarms, and succeeded in hiving them all securely. In this old hive I was apprehensive that there was some difficulty, from the confused manner in which they left, and approached the hive, and the irritable disposition they showed on approaching the apiary since the early part of summer. I was under the necessity of having my garden syringe used very freely, to make them sufficiently quiet to remove the bottom board, and put the follower, as you term it, in its place.

I soon succeeded, and took out the bottom board, which, in this hive only, had not been exchanged for near two months, in consequence of their disposition to sting all who approached. On this bottom board I found more than a dozen worms, from one half inch to an inch and a quarter in length, all active, and moving very quick, except two, which the bees had covered close with their propolis. While examining the bottom board, one of the worms bored through the end of his covering, and crawled out; he was an inch and five-eighths long, and as large as a common pipe-stem, a few inches from the end—The other worm that was covered, on raising the propolis with my knife, I found had nearly effected his escape by making a pathway in the wood under his covering,—it appeared as if made by a gouge,—nearly one quarter of an inch in width, and of the same depth;—he would soon have obtained his liberty. I was fully satisfied the worms would have soon destroyed the bees, and was glad I had commenced their removal. The last mentioned worm was quite as large as the other; their bodies of a yellowish white, their heads covered with a hard yellow scale. The next morning, the 20th, I stopped entrance of hive—buckled straps to secure the follower,—took off glasses from top of hive,—corked up holes leading to glasses, and removed hive from apiary—then attached the receiver to bottom of follower, and took the hive (top on which glasses stood down,) and placed it in cistern,—then, after drawing the sliders on the follower and in the bottom of receiver, filled the cistern gradually with water nearly to the top of the hive. The bees went up readily, and appeared to fill the receiver, which was then removed from the old hive, first closing the bottom of receiver with the tin slides. On examining the old hive, I found in one corner of it more than one hundred worms of all sizes. They had covered many of the bees with a sort of web, and destroyed them. Some bees remained in the spaces between the sheets of comb. A few pieces of the comb, which the worms had not approached, were then fastened on sticks and put in the new hive,—the comb free from worms, unless they were in the sealed cells (which I

hope was not the case); the receiver attached to new hive, the communication opened, and the bees passed into it readily. The bees found in the comb and apparently drowned, were put into the apartment appropriated for them in the receiver, but not more than half a pint were resuscitated. I lost nearly that quantity, but I thought most of the loss was occasioned by not putting them into the receiver before the bees were put into the new hive, as their warmth was necessary to restore life. I took from the old hive twenty pounds strained honey, and from the comb in the neighbourhood of the worms ten pounds and an half, which is kept to feed the bees when required. Neither the honey nor comb received any injury in quality, or diminution in quantity from the immersion in water, and no one was stung during the whole operation. On the 29th following I removed another swarm, for the purpose of putting them into a Charlieshope hive, and on the 30th, another, for the same purpose. The last was a swarm of this season, the other a swarm of 1830, that had thrown out a swarm early this season. I had no difficulty in removing them; no person was stung, and the three swarms in their new tenements appear to be doing well. I fear, however, it was rather too late in the season; but they must be supplied, to fill their comb, till the cold weather makes them torpid. I am much pleased with your plan, and think it a great improvement in the management of bees; hope you will communicate it for the benefit of the public.

I am also very much pleased and gratified with your method of securing bees from the ravages of the bee-moth. I called last spring to look at your bees, but you was from home. I was at once struck with your closing the apiaries with millinet on a light frame, kept close at the ends by buttons. I have found the practice of stopping the entrance to the hive with wove wire doors, very troublesome and inconvenient, at times hazardous, and injurious to the bees in warm weather, as they appeared to suffer for want of air, which your plan of closing the apiary only, entirely obviates.

I adopted it on my return home for all my apiaries; found it

simple, and not expensive;—it did not cost quite fifty cents to secure my largest apiary, containing three hives in a range. I never failed to close my apiaries at sunset through the season, and shall continue it till cold weather puts a full check on all winged insects; and am fully satisfied it will prove effectual, unless the moth wings his way to the hive during the day. I have found a number on the outside of the apiaries in the morning, and destroyed them. I cannot but prefer the Charlieshope hives to any I have yet met with. I shall be disappointed if, on trial, they do not obtain a preference with all who use them. I must defer at this time the result of my experiment with the worms taken from the old hive, which I put in a box with honey and honey-comb. On my next visit, if I have the pleasure of meeting you, will give you the particulars.

Respectfully, your obedient servant,

GORHAM PARSONS.

Rev. ISAAC R. BARBOUR.

APPLE ORCHARDS.

BOSTON, SEPT. 1, 1831.

Benjamin Guild, Esq.

SIR,—Observing the Massachusetts Agricultural Society have offered a premium of fifty dollars for the best apple orchard, I have to request you will present my claim to the Committee, with the following statement.

In the fall of 1822, the piece of ground, where the orchard stands, was broken up, and holes dug for one half of the trees. The trees were taken from the nursery as soon as the frost permitted, and set out in the Spring of 1823, ⅓ Russetts, ⅓ Greenings, ⅓ Baldwins. The ground was planted with corn and potatoes in the fall of 1823; holes were dug, and the other half planted in the spring of 1824; the ground planted with corn where the potatoes were, and so on till 1827, when it was laid down with barley, clover and herds grass. About five feet in diameter has been kept open, and hoed every spring and fall,—every other year about a peck of wood ashes has been put

round each tree. They have been trimmed and washed every spring and fall, with a wash ¼ lime and ¾ cow dung, till this fall, when I washed them with soap suds.

Your humble servant,

JOHN MACKAY.

THE EXTRAORDINARY DESTRUCTION OF THE LAST YEAR'S WOOD IN FRUIT TREES, AND THE PROBABLE CAUSES OF IT.

To the Publishing Committee of the Massachusetts Society for promoting Agriculture.

BOSTON, MARCH 20, 1832.

GENTLEMEN,—I shall assume as a fact, founded on my own experience, and the information derived from various and extensive inquiries, that the last winter has most injuriously, possibly *destructively*, affected every variety of fruit-trees. The extent of the evil cannot be accurately settled until we have more information than we possess at present. Neither can the extent of the injury be ascertained, even where we have the most perfect means of examination, until we shall know with what vigour nature may exert itself to restore or repair its losses. I perfectly recollect, that about forty years since, there occurred a frost late in May, which wholly destroyed the young shoots of every species of fruit and forest trees. They recovered from that loss in one or two years. But the case differed in many very material respects from the present. The injury in that case only extended to the young and green shoots of the *existing* year, but it did not affect the last year's shoots. This is a very important distinction. The last year's shoots were not deprived of their functions; the numerous latent buds, which were not developed, instantly shot forth, and supplied the place of those which were destroyed. In the present case, the whole of the last year's wood, all that part of the tree which was designed to extend its growth, is wholly destroyed in very many, if not in a majority of cases. The vegetative or conservative power has been destroyed in its natural source—it is precisely

as if you had pruned back all the growth of the last year. I have no doubt that the root and the stock still retain their powers of renewal, and that the trees will send forth new and vigorous shoots from the older limbs. It is interesting to the cultivator to inquire, what will be the probable effect of this new and extraordinary demand on the powers of the plant. I mean to state only what appears to my mind to be its probable effects.

As to plants which are herbaceous, and perennial, and which do not shed their leaves, the effects of destruction or excision of the last year's growth are very trifling. To some of them, such as the geranium, it seems to be questionable whether any serious injury results from such a loss. It is also true, that many woody plants, which are deciduous, possess a power of reproduction which renders them almost insensible of the effects of constant deprivation and repeated deprivation of the last year's growth. It is from this law or principle, that the plants which we select for hedges, will endure for an almost unlimited period the barbarous clippings and privations to which, for use or ornament, they are annually subjected. Nay, more, they seem even to thrive the better under this treatment. This however is only deceptive. The plant does in fact suffer as much as its more noble and more useful congeners,—as the finest fruit tree. But as its use to us is of a different character, as we value it, not for its fruit, but for ornament, and protection against cattle, we disregard the mutilation of its natural powers; we treat it as the Italian connoisseur treats his eunuch—we deprive it of its powers of reproduction, in order to gratify our taste; but we as truly and effectually mar the designs of nature in the one case as in the other. Let me exemplify this by a simple case. The white thorn of Great Britain is kept as a dwarf—it rarely flowers—it is a feeble, helpless plant. I have one, which was left in my meadow by an English gentleman, who owned the estate I now possess, sixty-five years since. It stands alone. No rude hand has disturbed it. It is as *large* as a *pear* tree, and flowers and ripens a bushel of fruit every year. It is man, who has

dwarfed it for his own purposes, as he has improved the button pear to the Beurrè and St. Michael, by his attention to it —as he has raised the black cattle of the north of Europe, and the wild sheep of the steppes of Asia, to the noble short-horned bull, and the Saxony buck. It is not distinctly understood, except in China, where they raise the oak, the noblest oaks, to eighteen inches in height, that it is as much in the power of man to degrade, as to improve that vast realm of nature over which God has given him the absolute dominion.

To return to our principal inquiry, after an illustration which some may consider a rhapsody, but which, I hope, more reflecting minds may view in a very different light, as exhibiting some sound and philosophical views of a subject which has as yet received no very definite developement—What will probably be the effect of the late destruction of the last year's growth of fruit trees? Will it not be, at least, the procrastination of fruit? May it not result in permanent disease? Will it not be the policy of those, who are younger than I am, to set about planting new trees? Why should they be discouraged? If for two hundred years no such calamity has occurred, why should they dread its recurrence? No. It would be as unmanly, as it would be irrational, to despond. Pears, apples, plums, and peaches will decorate our tables ten years hence in as great profusion as now. Those who escape the evil will obtain greater profits.—The nursery men, though immediate sufferers, will be greater gainers in the end. After all, we may be deceived as to the extent of our losses. Nature is more powerful than we are aware of, and she may restore what now seems to be irreparable.

To what cause is this extensive destruction to be attributed? Most certainly not to the extremity of the cold. The trees affected are subjected every winter, in Holland, Germany, and Russia, to a lower state of the thermometer. To what then is it to be ascribed? It is painful to be obliged to offend our national pride by saying, as we believe to be the fact, that it is owing to the variations of our climate—to our proximity to the

Gulf-stream, which, within twelve hours, throws upon us the temperature of Spring in the midst of winter. Am I singular in this opinion? By no means. Writers in this country, and in Europe, of great intelligence, have long since attributed the destruction of fruit trees, not to the *cold*, but to the *occasional heat* of winter. I have many important facts in my possession, to prove this to be true. I will select one among one hundred. The ivy of Great Britain, a vivacious plant, will stand, *has stood*, this very winter, on the north side of an edifice, while on the south it uniformly perishes to the ground.

JOHN LOWELL.

LIVE HEDGES FOR NEW ENGLAND.

IT is not my intention to recommend live hedges for this rocky part of the United States. Our own stones furnish the best divisions we could ask for or desire; and on most farms, the removal of them from the soil, would be economical, and the placing them as partitions for fields is the cheapest and most natural mode of disposing of them. Still, in New England, there are extensive tracts of country, of alluvial or diluvial soil, in which no rocks are found, and in which a stone wall could not be obtained without great expense. Such is the state of the greater part of the old colony below Plymouth, and of some parts of the county of Middlesex. But wherever wood fences are required, it may be useful to substitute live hedges. The question is, what has been our experience as to the comparative value of the various plants employed in New England for live hedges? In the remarks which follow, I beg it may be understood, that I do not intend to oppose the opinions expressed by a learned and judicious horticulturist, Judge Buel; nor those expressed by practical gentlemen at the south; but simply the results of my own personal experience and observation, during the last eighteen years, since the subject of live hedges attracted the attention of our cultivators. Nothing which I may say can in any degree impeach the correctness of their statements, be-

cause the causes of the failure of certain plants with *us* may have been entirely *local*. This would not appear remarkable, when we consider that the Locust, (*Robinia Pseud acacia*) is absolutely interdicted to us, while it is the favorite, and one of the most valuable trees of the south.

Suffice it then to say, that the Virginia thorn, introduced here by Mr. Quincy, with whom it appeared to succeed, is, in most cases, utterly useless as a fence. This is chiefly owing to the ravages of a worm at its root; whether it be the same which attacks the apple and the quince, is a point not settled. The same objection is applicable to the English hawthorn. And to this *fatal* one, is superadded another, the appearance of a fungus of a yellow colour on the leaves, which utterly disfigures them, and strips them of their foliage in September. The *Gleditsia triacanthos* is not suited for hedges with us. If left to grow, they soon grow out of all reach; if checked, they are winter-killed. We are indebted wholly, and entirely, to the experiments of Ezekiel Hersey Derby, Esq., for the possession of a plant, the buckthorn *(Rhamnus atharticus)*, which, from ten years trial, seems to afford every desirable quality for a healthy, beautiful, and effectual hedge. We refer the public to Mr. Derby's account in the New-England Farmer, for particulars.

I can only say, and I feel it a duty to say, that I have tried this plant for six years. It is hardy, and rapid in its growth —of impenetrable thickness, and so far as that extent of experiment enables me to judge, not subject to any disease, or the visitation of any insect whatever. As it is very provoking, as well as expensive to cultivators, to be led astray, and to find, after five or ten years, that they have been deceived, they would do well to examine the growing hedges of the buckthorn, or *Rhamnus Catharticus*, at Mr. Derby's, Mr. Brooks's, Dr. Jackson's, or at my place.

JOHN LOWELL.

SOME NOTICE OF THE ARACACHA, AND OF THE LAUDABLE EFFORTS TO INTRODUCE IT INTO THE UNITED STATES.

To the Publishing Committee of the Massachusetts Society for promoting Agriculture.

GENTLEMEN,—As the first attempt to introduce this valuable esculent root into the United States, as an object of garden, and possibly of field culture, has been made since the last number of your journal was published, it seems to me, that it would be unpardonable in the directors of your journal to omit any notice oft his plant, and of the meritorious efforts to introduce it into our list of esculent vegetables. This plant is considered in the new South American State of Colombia. "as the most useful of all the edible roots, being superior to the common and sweet potatoes." In using this language, I must be understood to quote the expression of those, who have tasted it in its native country, and by no means to admit, that much of this preference, and of its reputation, is not due to the prejudices of persons who do not see the Irish potato in perfection. It is not certain, that the Aracacha, could it be raised in perfection in the United States, would hold as high a rank here, as it does in Colombia. Still there can be no question, that it is a very pleasant and wholesome vegetable, and if susceptible of successful and *profitable* culture in the United States, it would merit great attention. It has, for some years past, engaged the attention of European cultivators, rather as a desideratum, than as an object of decided hope, and assured culture. It has been introduced into Jamaica with, as it is confidently asserted, perfect success.

Although it had been tried in the state of New York, and the indefatigable proprietors of the Flushing Linnæan Garden claim the merit of cultivating it with perfect success for several years past, yet it was due to Gideon B. Smith, Esq. editor of the American Farmer, printed at Baltimore, to say,

that he made the first extensive experiment to introduce this plant into general culture in the United States. We shall have occasion to refer to the experiments of the proprietors of the Linnæan Garden, in the close of our remarks.

Mr. Smith is unquestionably entitled to the merit, and it is no small one, of importing this plant, on a great scale, not for his own personal benefit, (for he seems to be superior to any selfish motives), but for the advantage of his country. He distributed his plants most liberally, with a view of testing their adaptation to the various sections of our country. While he transmitted a reasonable proportion to Massachusetts, he, at the same time, judiciously sent a share of them to South Carolina. It is my own private opinion, that if they shall be eventually found to flourish, and to attain a solid value, it will be in the two Carolinas, Georgia, Florida, and Louisiana. The reasons for this opinion, besides those which are obvious, I shall state hereafter. The Massachusetts Horticultural Society did me the honor to transmit three plants of the Aracacha to me, probably from the knowledge that I feel a deep interest in the cause of horticulture, and enjoy a great and unfeigned delight in new experiments, which promise, however faintly, the improvement of these invaluable arts. I tried these plants. They arrived in the best possible order. They were in the highest state of health and vigor. They were planted in excellent soil—watched with the greatest care. Their growth was rapid, vigorous, indicating the highest state of health. I felt assured, that the Aracacha was adapted to our climate. I pointed it out as a successful experiment. Yet suddenly, without frost, or cold, or any perceptible cause, the leaves perished. Tenderer plants, plants of tropical countries, continued to flourish; but these failed. I could only indulge in loose conjectures as to the cause. I struck upon the heavy rains, as a possible cause; and knowing that South America was subject to severe and long continued droughts, perhaps my conjecture was not a very absurd one. Still it was but a conjecture, and I did not value it much. Long and repeated experiments, much pa-

tience, and great coolness, are required to the *acclimation* of plants—that is, in introducing into new climates and new soils, plants born and cultivated under others essentially diverse. Still, as a person entrusted with a new experiment, or a plant entirely new, and deemed of great value, a report from me, of my own experiment, was due to the Society, who had shown such a mark of its confidence. It was made,—the failure was detailed at large, and certain loose conjectures or suggestions were made as to the causes of failure. I was grieved, when I found that Mr. Smith, whose exertions I so much valued, seemed to consider my remarks, as, in some degree, an impeachment of the value of his exertions. Most assuredly no such intention existed. I considered the effort which he had made as entitled to the thanks of every friend of horticulture and agriculture. But I have always considered it as solemn a duty of every cultivator, to announce to the public his failures, as his successes. I have thought, after thirty years' experience, that *more evil* has resulted from too precipitate recommendation of new plants, and new processes in agriculture, than from the opposite defect—the cautious, even incredulous disposition of cultivators to admit new and manifest improvements. I really believed that my experiment on the Aracacha had been so fair an one, and the season was so favorable, better than I had known for twenty-five years, that the failure must be attributed to the utter incapability of our soil and climate to mature this plant. Let us now see, how far the evidence before the public supports, or defeats or contradicts, the opinion thus formed.

In the first place, we will take Mr. Smith's own experiments, as detailed by him last autumn. We are promised new particulars, which he flatters himself will show, that the Aracacha may be raised as easily as the parsnip—he might have said, as well as the common potato. Now what was his success? Did he raise one bushel fit for the table? If so, what was the quality and value of the root? Look, then, at Mr. Legare's minute and very clear and intelligent statement of his

very careful and cautious experiments? Did he raise enough to make presents to his friends of this invaluable root? No. But any vegetable, to be of permanent value, should at last yield eight fold. The sweet potato, even here, yields ordinarily twenty-five fold, or one bushel yields twenty-five. The Irish potato yields from ten to fifteen fold. If, then, this new acquisition had yielded even eight fold,—and if it did not, it would not merit cultivation,—why have we not the evidence of its goodness and abundance for the table?—But, says Mr. Legare, the Chevalier Soulange Boudin states that it has been cultivated with success in Montpelier and Geneva! Ah! is this so? Could the potato be successfully cultivated in Montpelier and Geneva, and not be soon cultivated in Paris, if its products are sufficiently ample and abundant to render it an object of *profitable* culture? This fact (if it be one), makes me distrustful of the probable success of this plant. But the most discouraging fact, which has as yet attracted my notice, is this. When I stated my total failure in the cultivation of the Aracacha, William R. Prince, Esq. immediately came out with a declaration, that their establishment had cultivated the Aracacha without difficulty for several years past, and that he had transmitted many plants of it, raised by them, to Europe. If this be so, and we cannot doubt it, it is clear, that it never can be cultivated with success as a common culinary vegetable. It would have spread before this time throughout the state of New York. I knew a quantity of the common potato which was brought from Philadelphia in a silk handkerchief, and in two years I received a barrel of it for seed, which gave me nearly fifty bushels.

Will it be said, that the Messrs. Prince reserved every plant for profit, and could not spare even a mess for the Horticultural Society of New York to test its value in our climate? My answer is, that the tuberous part of the root, if in our climate it ever produces any, are not necessary to its propagation. It is only the crown and eyes which are employed. You may cut off the edible part, as in the Dahlia, without diminishing ts powers of reproduction.

What then, it may be asked, are your views upon this subject? Would you discourage the experiment? By no means. We rejoice that Mr. Smith has so much ardor and confidence. We wish we had a little of it.—But we would respectfully suggest the expediency of planting some of the roots in pots and tubs, and placing them in a hot-house, and endeavouring to raise seeds from them. Seeds sown here, will be gradually accustomed to our climate, and may become hardy. Plants raised *south of the equator*, it is of little moment whether in a high or low latitude, retain for a long time their natural habits —that is, they grow in our winter, and perish in our summers. This is so true, that it is extremely difficult to change these habits even in plants which are now common to both hemispheres.

I will state one remarkable example. I received the golden potato of Peru, very celebrated in that country. Three successive years it has been fully and fairly tried by the aid of artificial forcing, and every advantage of location, but it obstinately refuses to bend its habits to our climate. It will start either in the fall, or if put in the hot-bed in April, it will not produce its tubers till October. I have often reflected upon the curious fact that the potato should have been so easily acclimated in Europe, when we now cannot acclimate the Peruvian, or even the California potato, both of which I have tried for three successive years. My explanation of it is this, that the potato spread by slow degrees from Chili to Virginia, during a period of perhaps one thousand years, and became gradually inured to a northern latitude. It is clear, that the potato never was found in a wild or natural state in North America, and yet equally clear, that it was transmitted first from Virginia to Europe.

One of the Trustees of the Massachusetts
Society for promoting Agriculture.

From the Southern Agriculturist.

RESULT OF AN ATTEMPT TO CULTIVATE THE ARACACHA.

It is known to the readers of this journal, that Mr. Gideon B. Smith, of Baltimore, (editor of the "American Farmer") imported last spring from Colombia a number of Aracacha roots, which, with great liberality, he distributed in different sections of the United States. This root is considered in Colombia as "the most useful of all the edible roots, being superior to the common and sweet potato," and has for some time attracted the attention of the botanists and horticulturists of Europe, and many attempts have been made to introduce them there, as well as into the United States. These have generally been unsuccessful; in fact, we know of no place where they are cultivated with success out of South-America, except some of the West-India islands. The Chevalier Soulange Bodin states, that they are cultivated in the botanical garden of Montpelier, and flourish in that of Geneva;—but whether as mere objects of curiosity, or are so acclimatised as to become useful, we are not informed. A plant may be cultivated with success in a garden, where proper care can be bestowed, to protect from cold or shade from heat, which cannot thrive at all if exposed to the vicissitudes of the climate. We believe no attempt to accomplish this in any part of the United States has been even partially successful until the present year. The Aracacha has long been on the catalogue of the Linnæan Botanic Garden, New-York, and we obtained from thence, in 1828, four roots. They all perished during the first summer:—being absent the whole time, we know not to what cause to attribute their deaths. If Mr. Prince, (the proprietor of that establishment) has been successful in their culture in the open ground, he has not made it known to the world, (at least we have never heard of it); we are therefore induced to believe that he has not, especially as, when we requested information, he referred us to an article pub-

lished in the " American Farmer," relative to their culture in Jamaica. The efforts now made, may therefore be considered as the first which have been even partially successful, and which have been made public.

Some of the roots were sent on to the Massachusetts Horticultural Society, and by them committed to one of their members. He has reported an entire failure, and expressed an opinion unfavourable to their being sufficiently climatised for any useful purpose, if at all.

We will now proceed to state the result of our attempt to cultivate them; and as this plant may at some future time become of importance to us, we hope we shall be pardoned for being minute in our account. It will be interesting, even should they never become objects of culture with us, to know hereafter that their introduction was attempted, and what was the result. Moreover, publicity being given to all these experiments, they will serve as guides to those who may wish to undertake their culture.

Early in March, we received from Mr. Smith fifteen roots, which we had planted on the 26th in the following localities. Four roots (marked No. 1), in a sandy loam, near the termination of a gentle declivity. This was chosen in order that they might not suffer from our spring droughts. They were guarded from an excess of moisture, by having a ditch cut within a few feet of them. The balance were planted in a garden, the corners of which pointed to the north, east, south, and west. Three roots (No. 2), were planted in the northern corner, near to a paling fence, and were protected on the north-east and north-west by it, and which afforded a shade to the plants in the afternoon from about three o'clock; the rest of the day they were fully exposed. Four roots (No. 3), were planted in the southern corner, and were greatly protected from the sun, by a house to the south, a close paling fence to the east, and a large peach tree to the west, in consequence of which, at no time were they long exposed to the sun. Being perfectly open to the north, and with nothing overtopping, these plants enjoyed as cool and

as favorable a situation as the climate would admit of. Two others (No. 4), were planted in the middle of the garden;—the soil of the whole garden was light and sandy. A compost of equal quantities of *well-rotted* stable and cow-pen manure was used.

When planted, most of them had commenced vegetating, and on 4th of April they were above ground, with leaves fully expanded. The month of April was exceedingly cool and rainy, whilst May, on the contrary, was excessively dry, more so than we ever recollect it to have been so early in the season. On our farm, where these roots were planted, the drought was so severe, that many vegetables in the garden perished for want of moisture, and many which we consider as best able to withstand such seasons, were so injured as not to recover their vigour during the whole season. The month of May, although dry, was generally cool; there were, however, some very warm days, during which the leaves of all vegetables were more or less wilted. During this trying season, the Aracacha were most luxuriant in their growth, and progressed rapidly, apparently totally unaffected by either heat or drought. There was very little if any difference of growth between the different plants. They continued to promise well until the middle of June, when we had some unusually high tides, which overflowed places not subject to inundation even in gales. These tides did us some injury; and though they did not overflow the bed on which No. 1 was planted, yet they penetrated into the adjacent ditch, the consequence of which was that one of the plants soon perished. Soon after, there occurred heavy falls of rain, and all of these perished.

The year 1831 has, in the lower part of this State, been remarkable for the alternations of drought and heavy falls of rain. The winter had been unusually severe and rainy; the last of February and March was, however, mild, and not more rain fell than was necessary for the purposes of vegetation. On the 16th April there occurred a most tremendous fall of rain, accompanied with much cold. During the month of May there fell but one

shower,* and vegetation suffered much, as before noticed. From the middle of June to the middle of July, there was scarcely a day during which it did not rain, and for many days, violently. From the 16th July to the 9th August we had no rain: the remainder of August and September were rainy, whilst October was just enough so for the purposes of vegetation.

It will be seen from the above statement, that contrary to the usual course of the seasons, we had alternations of droughts and inundations in constant succession, and with scarce any intermediate stages; for from the time it ceased raining, it very often happened that not a shower fell again until the next deluge. These vicissitudes were extremely unfavourable to all garden crops, and it could scarcely be expected that plants which were cultivated here for the first time could prosper, when those long habituated to the climate perished. Notwithstanding, however, the Aracacha grew well until July, when there was an evident decline, and which was most perceptible after the heavy falls of rain, which commenced in June:—by the 6th August all on the low grounds had died, as well as one of those in the centre of the garden. By the middle of September all in the garden perished, except those in the southern corner, which were protected from the influence of the sun by the house, &c. These plants were not exposed, we believe, to the direct rays of the sun more than three or four hours during the day, if so long, and from their situation the ground must have been as cool as it was possible for it to be during summer.

These plants grew as vigorously in the early part of the season as any of the others, especially during the dry weather, but appeared to suffer much less from excessive moisture. During the months of July, August, and the commencement of September, they remained stationary, perhaps on the decline; not one of them, however, died. Towards the last of September there was an evident renovation. The old leaves,

* These remarks are, of course, applicable only to our farm and its immediate neighborhood.

which before had a sickly hue, recovered their healthy appear ance, and there was a vigorous growth of young shoots and leaves. From this time, until killed by a frost in the middle of November, they were far more luxuriant than we had ever before seen them. During the summer we could not find more than five shoots. On a root we have taken up since the tops were killed, we have found sixteen large and distinct shoots, and a large number of smaller ones growing from these, with innumerable embryos and eyes, which in a short time would have astonishingly multiplied the product of the plant.

It perhaps will be expected that we should give an opinion relative to this plant's being climatised, and its value. We cannot from this solitary experiment venture to give the least opinion. We have stated the facts as they were noted down at the time, and it will remain for each to form an opinion for himself. All of the plants flourished remarkably well during the early part of the season, and whilst it continued dry, but perished as soon as the heavy rains set in (except those noted). From this we conclude that heat is not so injurious to them as much moisture, and perhaps it was both combined which produced the result. Over many I had scaffolds erected from three to four feet high, sufficient to shade them from the midday, but open to the morning and evening sun, also enjoying a free circulation of air. Some were thus protected from the commencement, whilst others received it at a much later period. I found these of no avail. On examining those which perished, I found invariably that the lower parts of the original plants rotted first. The crown (from whence issued the shoots) continued alive much longer, and the leaves and the young shoots remained of a good colour, some time after decay had commenced. They appeared to thrive best in moderately cool weather, and were not affected by such frost as killed tomatos and other tender vegetables;—their situation, perhaps, may have aided in protecting them. We wish much that we had given these plants some protection during the winter; a very slight one we believe would have answered. Had we

done so, we doubt not but that we would have been the first to have eaten of the matured Aracacha root, in this State at least, if not in the United States. As it is, we have partaken of one, though perhaps not in perfection.

This plant grows differently from any we have ever noticed. We were led to believe, from the statements we have read, that it produced *roots* resembling a *cow's horn* in shape, and that these were the parts eaten; but if so, our's have failed altogether in this respect. We are inclined to think, however, that these statements are erroneous. The tuber, off-set, (or whatever it may be termed) which is used for propagation, resembles somewhat the arrow-root, and like it possesses several eyes; these are principally near the crown. At the base, or part where it is separated from the original plant, it produces a number of fibrous roots, and from no other part of the plant have we observed the least appearance of any. On examination, we have found none of these exceeding one-eighth of an inch in diameter, but generally not half that size. The growth is altogether upwards. From the crown, shoot, in the first instance, several single leaves, each indicating where will be a tuber; from the centre of the foot-stalks of these leaves arise others in succession, which were enveloped by those preceding—for the plant is *indigenous*; in the course of time tubers are formed, which again produce others from their sides, thus forming a very large cluster on the top of the original plant, which does not increase proportionably in size. One of those which we have recently examined, and which was about two inches in length and one in diameter when planted, has increased only to four in length and one and a half in diameter, whilst at the same time it has produced sixteen shoots or tubers, varying from three-fourths of an inch to three inches in length. It was the original stem (or plant)after being divested of all the young tubers, that we had cooked; we found it extremely tender, very delicate, a little mealy, and having the flavour of the Irish potato and celery combined. Whether such is the taste

of the young tubers when in perfection, we hope to determine in the course of the present year.

A part of our plants we took up soon after their tops were killed by the frost; two of these we separated (the young tubers from the parent, and from each other), and one we left entire as taken from the ground; these were packed away in dry sand, and placed in a potato cellar. One plant we permitted to remain untouched in the open ground, merely drawing a little earth over the crown to protect it from frost. On examining these plants to-day, (Jan. 17, 1832,) we find that the one left in the open ground, has shot out several leaves, which will in a few days protrude through their covering. The plant which had been left entire and packed away in sand, has also commenced shooting. Those which were first separated and then packed away, remain as at first. We have separated the tubers from the one which was entire, and planted a part out; the remainder we shall preserve for future use. From what we have seen of their growth, it appears to us that it would be advantageous to earth them up. This we shall try with some, whilst others shall be left undisturbed. We will vary our experiments as much as possible, and endeavor to ascertain, in the course of the approaching season, what probability there is of the Aracacha ever becoming of value to us. Should it become so climatised as to be cultivated in the open ground freely, it cannot fail to be of immense value; its present indications are that it will prove very productive. From some interesting particulars respecting this plant, we refer our readers to the article from the pen of Gen. H. A. S. Dearborn, vol. iv. p. 322.

IMPORTED STOCK.

To the Publishing Committee of the Massachusetts Society for promoting Agriculture.

Boston, March 22, 1832.

Gentlemen,—It is certainly to be regretted that some respectable farmers show a disposition not only to indulge prejudices against the imported breeds of cattle, but to excite these impressions on the minds of others. They appeal to a popular feeling, and a very natural one, which too easily besets us, "our own superiority." "The true worth of our ancient breed," says one, "as to their competition, is much neglected." Again—"our old accustomed breeds are unnoticed." In the most approved practices of breeding of stock, perhaps no better reason need be given, for a change, than this very fact, that it is *our old accustomed breed* on which a cross would be beneficial for that cause only. As the disadvantage of breeding "in and in" for a length of time, has been long admitted, the principle of a change of breed, or cross, by judicious selections, has, it is believed, induced almost universal assent and practice.

Some contend that a given weight may be placed on any part of animals, to correct a deficiency; and others, that every disposition and property may be improved by a skilful observation and practice herein. The attention of agriculturists in Europe, has been for the greater part of the last century, engaged in this process. In England more especially, if we can believe all we see—or all we hear—or any part of it—animals of extraordinary production, as well as those of great beauty, size and power, with a favorable disposition to fatten, have been brought to view. Instances might be here quoted, but they are too well known to need it! Wherever, in any country, a judicious selection of stock has been in careful continued practice, we must shut our eyes and seal up our senses not to perceive the beneficial result. And why should we

doubt our power in this particular? It seems the all-wise intention in our condition, that we should cultivate and improve every thing about us! And do we not so do? How is it with the horse, and various other animals? Are they not bred and reared, for various uses, by careful selection and attention? And why should we easily and indolently admit that nothing is to be effected in our cattle, forming, as they do, the great sources of our comfort and support?

But though our efforts, in this country, may have been less strenuous and uniform—and for a shorter period of time—still we do not want proofs of what may be done at home. Our cattle are susceptible of improvement, as the Sutton race will show. Those who most dislike the imported breed, tell of some native stock in their neighborhood which is superior.—Be it so! Our stock was mostly derived from Great Britain, and is doubtless as capable of improvement.

All that is to be said, is that when *that* which time only can produce has for nearly a century been in careful progression, a prudent consideration will avail of the advantage.

It is further complained, "that much is said of the imported, and little or nothing of our native stock." If this alludes to any general expression or opinion, it will have its due weight, and no more. But the object of the Massachusetts Agricultural Society has been, to promote a *judicious selection*, as the *great thing necessary*,—and so their committees have uniformly urged. The premiums on milch animals have been mostly given to native stock, it is believed—some to the imported breed, to be sure,—the far greater number of the former makes this natural. In many cases the richness of the milk, in the imported breed, has been remarkable—and their general size, proportion and beauty, has been thought to exceed our old races.

The disappointment of a farmer, who has paid a large price for an animal (as has occurred) that has long legs, and "a bag that is difficult to be found," is to be regretted,—but these things will sometimes happen. But it is earnestly contended for in Europe, and by many here, that where there has been a long

transmission of improved blood in stock, this occurs much more rarely!

The improved short-horns are not generally esteemed a long-legged race—many of them are great milkers—though for this property they are thought by some to have too great a tendency to become fat. By this facility they often disappoint those who wish to increase their breed. This disposition to fatten is so felt in England, that, at their Smithfield cattle-show last year, it was proudly said, "Foreigners may boast of their sunny climes,—of the spontaneous produce of their soil,—of their grapes, and their wine, and their olive yards,—but no land but England can so boast of their *Fat Cattle Show.*"

The object of the Trustees of the Massachusetts Agricultural Society, is to encourage whatever is connected with the great staples of the country—not to write down one race of cattle, and set up another. Whatever means are at hand, let them be made use of. But if others, and superior, can be had from abroad—brought home, and used to greater advantage, let us not be too steadfast in our old habits and practices, lest we should perceive, too late, that we have stood still whilst others have advanced.

As connected with this subject, and likely to afford some interest to a portion of your readers, I subjoin an extract from the British Yeoman and Rural Gazette, lately sent me, which contains the award of the prizes at the *Smithfield Cattle Show* of 1831. The genealogy, mode of feed, &c., are given. It will therein be perceived that the breed of the prize ox is traced through Comet back to Hubbuck, the reputed source of great production, from which we have Denton, Admiral, Wye, Comet, and others of the improved short-horn breed of cattle.

I am yours,

JOHN WELLES.

SMITHFIELD CATTLE SHOW.

From the British Yeoman and Rural Gazette of January 7th, 1832.

We went to the Show and were much gratified! Foreigners may boast of their sunny climes—of the spontaneous produce of their soil—of their pomegranates, their grapes, and their wine, and their olive yards; but, after all, no land but England can boast of their *fat cattle shows*. It is only *here* that such a thing is known. France and Spain for wines; Holland for tulips and bulbous roots; Russia for its tallow, and Peru for its gold; but only old England for FAT CATTLE!

The following is an account of the prizes awarded:—Lord Brownlow's ox is a most beautiful docile creature, and is, independent of his great size and weight, a perfect picture, being wholly white, and that like snow. There were beautiful specimens of the South Down sheep, bred by Mr. Ellman, and his Grace the Dukeof Richmond; but the following are what the judges deem best.

The award of the prizes of the Smithfield Club were, as delivered at the annual dinner by Lord Althorp, as follow:—

OXEN.

A prize of 20 sovereigns, to Earl Brownlow, for his 4 year and 7 months old Durham ox; bred by him; a silver medal as the breeder of the same; and a gold medal, for the best beast shown.

First prize of 20 sovereigns, to Jas. T. Senior, Esq., for his 4 year and 10½ months old Hereford ox; bred by Mr. John White; and a silver medal, as the breeder of the same, to Mr. John White.

Second prize of 10 sovereigns, to Messrs. Edward and Chas. Marfleet, for their 3 year and 11 months old Durham ox; bred by them.

First prize of 15 sovereigns, to Mr. John Slater, for his 4 years and 3 months old Hereford ox; bred by Mr. Dobson; and a silver medal, as the breeder of the same, to Mr. Dobson.

Second prize of ten sovereigns to William Smith, Esq., for his 3 year and 4 months old improved short-horned ox ; bred by himself.

First prize of ten sovereigns to Mr. Richard Kitelee, for his 3 year and six months old Hereford ox ; bred by Mr. Walford; and a silver medal, as the breeder of the same, to Mr. Walford.

Second prize of five sovereigns to James T. Senior, Esq. for his 3 year and 2 months Hereford ox ; bred by Samuel Peploe, Esq.

Prize of fifteen sovereigns to Lord Viscount Althorp, for his 7 year and 3 months old Durham cow ; bred by Earl Spencer ; and silver medal, as the breeder of the same, to Earl Spencer.

Prize of ten sovereigns to Charles Stokes, for his 4 year and 2 months improved short-horned heifer ; bred by himself; and a silver medal as the breeder of the same.

SHEEP.

First prize of ten sovereigns to Mr. W. Pawlett, for his three 20 months old Leicester wethers, bred by himself; and a silver medal as the breeder of the same.

Second prize of five sovereigns to Lord Viscount Althorp, for his three 21 months old Leicester wethers, bred by him.

Prize of ten sovereigns to Mr. Charles Stokes, for his three 32 months old Leicester wethers, bred by himself; a silver medal as the breeder ; and a gold medal for the best pen of sheep.

First prize of ten sovereigns to Sir Percival H. Dyke, Bart. for his three 20 months old South Down ; bred by Sir Thomas Dyke ; and a silver medal as the breeder.

Second prize of five sovereigns to Mr. Thomas Ellman, for his 20 months old South Downs. Bred by himself.

Prize of ten sovereigns to Mr. Stephen Grantham, for his 32 months old South Downs. Bred by himself; and a silver medal as the breeder.

PIGS.

First prize of ten sovereigns to Thomas French, Esq., for his three 32 weeks old Essex pigs ; bred by himself, and a silver medal as the breeder.

Second prize of five sovereigns to Messrs. Borrowdale and Taylor, for their three 34 weeks old Neapolitan and Essex pigs ; bred by Mr. Taylor.

EXTRA STOCK.

A silver medal to Mr. John Freestone, for the best long-wooled sheep.

A silver medal to Mr. Stephen Grantham, for the best short-wooled sheep.

A silver medal to Thomas French, Esq., for the best pig.

The white Durham ox was calved in 1827—he was taken from the cows at three days old, and then kept on linseed porridge and hay for that summer, hay and water the following winter. In the year 1828 he was summered in his lordship's park, the following winter he was put out to keeping on barley and oat-straw for twenty weeks. In 1829 he was summered in his lordship's park ; he was kept on straw the following winter till the first week in January, 1830 ; he was then put into a loose box, and kept on mangel wurtzel and hay for some months, when he was allowed a small quantity of oil-cake daily ; thus he continued till the first of August, 1831 ; from that time he has been fed on Swedish turnips, carrots, and oil-cake—1460 lbs.

He was got by Cavalier, Cavalier by Blucher ; dam Countess, by Brampton ; grandam young Charlotte, by Wellington ; great grandam Old Charlotte, by Comet ; great great grandam Cathline, out of a daughter of the dam of Phœnix, by Washing ; Blucher, by Jobling's Wellington, now Rockingham ; dam by Mr. Charles Colling's North Star, by own brother to Comet ; Wellington, by the late Robert Colling's Miner, dam by Phenomenon, grandam by Colonel, great grandam by a son of Hubback's.

The dam of the white ox was bought of Mr. Heb, out of the North, of the true Durham breed.

CATTLE SHOW,
EXHIBITION OF MANUFACTURES,
PLOUGHING MATCH,
AND
PUBLIC SALE OF ANIMALS AND MANUFACTURES,
AT BRIGHTON, (MASS.)
ON WEDNESDAY, OCTOBER 17, 1832.

THE Trustees of the Massachusetts Society for the promotion of Agriculture, encouraged by the patronage of the Legislature of this State, intend to offer in premiums, not only the sum granted by the Government for that purpose, but also the whole amount of the income of their own funds. They therefore announce to the public their intention to have a Cattle Show and Exhibition of Manufactures, &c. at Brighton, on Wednesday, Oct. 17, 1832. The whole business to be transacted in one day. The following premiums are offered:—

FOR STOCK.

For the best Bull, above one year old - -	$20 00
For the next best, do. - - -	10 00
For the best Bull Calf, from five to twelve months old - - - - -	10 00
For the next best, do. do. -	8 00
For the next best, do. do. -	5 00
For the best Cow, not less than three years old	25 00
For the next best, do. do. -	15 00
For the next best, do. do. -	10 00
For the best Heifer (having had a calf) -	15 00
For the next best, do. -	10 00
For the next best, do. - - -	5 00
The Bulls, Cows, and Milch Heifers, for which premiums are awarded, to be kept at least one year thereafter within the State.	
For the best Heifer (not having had a calf) -	12 00
For the next best, do. do. -	10 00
For the next best, do. do. -	8 00

For the next best, do. do. -	$6 00
For the best Ox fitted for slaughter, regard to be had to, and a particular statement to be given of, the mode and expense of fatting -	25 00
For the next best, do. do. -	20 00
For the next best, do. do. -	10 00
For the best pair of Working Oxen - -	25 00
For the next best, do. - -	20 00
For the next best, do. - -	15 00
For the next best, do. - -	12 00
For the next best, do. - -	8 00

[*No oxen to be admitted to trial as working oxen, under four years old.*]

For the best Dishley Ram - - -	20 00
For the best do. Ewe - - -	20 00
For the best South Down Ram - - -	20 00
For the best do. Ewe - - -	20 00

The above premiums will be awarded on Sheep either imported or raised in the State; but the persons receiving the premiums are to enter into obligation to keep the same within the State, for breeding.

For the best Boar, not exceeding two years old	12 00
For the next best, do. do. -	8 00
For the next best, do. do. -	5 00
For the best Sow - - - -	12 00
For the next best - - - -	8 00
For the next best - - - -	5 00

To be kept one year thereafter for breeding, by the persons receiving the premiums.

For the best Pigs, not less than two in number, nor less than four months old, nor more than eight - - - - - -	10 00
For the next best, do. do. -	5 00

None of the above animals, except Sheep, as above specified, will be entitled to premiums, unless they are *wholly* bred in the State of Massachusetts.

Any of the above Stock, when raised and still owned at

the time of the exhibition by the person who raised them, will entitle the claimant to an allowance of ten per cent. in addition.

No animal, for which to any owner one premium shall have been awarded, shall be considered a subject for any future premium of the Society, except it be for an entirely distinct premium, and for qualities different from those for which the former premium was awarded. *Any animal which shall have obtained a premium as a Milch Heifer, shall not afterwards be entered for premium as a Milch Cow.*

BUTTER AND CHEESE.

For the best Butter, not less than fifty pounds	$20 00
For the next best, do. do. -	15 00
For the best Cheese, not less than one year old, and not less in quantity than 100 pounds -	20 00
For the next best, do. do. -	15 00
For the best Cheese, less than one year old, and not less in quantity than 100 pounds -	10 00
For the next best, do. do.	5 00
For the greatest quantity of Butter and Cheese, made between the 15th of May and the 1st of October, from not less than four cows; the quantity of Butter and Cheese and the number of cows to be taken into consideration, and specimens to be exhibited at the Show, of not less than 20 pounds of each, and the mode of feeding, if anything besides pasture is used - - - - - - -	20 00

Besides the above premiums for Butter and Cheese, the Trustees will award the following in the month of December :—

For the best lot, in tubs, pots, or firkins, not less than 300 pounds - - - -	100 00
For the next best, not less than 300 pounds -	50 00
For the best, less than 300 pounds and not less than 100 pounds - - - -	30 00

For the next best, less than 300 pounds and not less than 100 pounds - -	$20 00
For the best lot of Cheese, not less than one year old, and not less in quantity than 300 pounds - - - - - - -	100 00
For the next best, not less than one year old, and not less in quantity than 300 pounds	50 00
For the best lot of Cheese, less than one year old, and not less in quantity than 300 pounds	50 00
For the next best, less than one year old, and not less than 300 pounds . - -	30 00

The claimant for the several premiums on Butter to be exhibited in the months of October and December next, must state in writing the following particulars, viz. the number of cows kept on his farm; his mode of keeping; the treatment of the milk and cream before churning; the mode of churning, winter and summer; the measures adopted to express the butter-milk; the quantity and sort of salt employed; whether saltpetre, or any other substances have been used in the process; the best time for churning, and keeping Butter in hot weather, and the best mode of preserving it, in and through the summer and winter, and in what vessels.

The claimants for the several premiums on Cheese, must state the mode of making the same, and the following particulars, viz. the number of cows kept; whether the Cheese is made from the proceeds of one, two, or more milkings; whether any addition is made of cream; the quantity and sort of salt used; the mode of pressure, and the treatment of the Cheese afterwards.

Farmers in the several States are invited to compete for these premiums, at the exhibition in December.

Claims, for the premiums on Butter and Cheese last above mentioned, must be made in writing, addressed to Benjamin Guild, Esq., Boston, post paid, on or before the 3d of December next; and the parcels deposited before Tuesday, the

4th, at a place to be designated hereafter by the Trustees, on which day, at 10 o'clock, before noon, the Committee will proceed to examine the lots offered for premium, and none will be admitted after that hour.

The premiums will be awarded at the same place on Wednesday, the 5th.

Each lot must be marked with the initials of the owner's name, and the place of manufacture.

It is particularly recommended to the competitors, that the Butter be put up in the nicest manner.

And to take notice, that there will be a public auction after the examination by the Committee, and those who desire to sell will have an opportunity, without any charge for auctioneer's fees, but the government duty must be paid by the owners of the Butter and Cheese. The Committee will be at liberty to withhold from the auction sale any parcels, either of Butter or Cheese, which they may have reason to suppose, from the ordinary quality of the same, or other circumstances, may have been sent merely for sale.

VEGETABLE AND GRAIN CROPS.

For the greatest quantity of Carrots on half an acre, not less than 300 bushels - -	$15 00
For the greatest quantity of Potatoes on an acre, not less than 500 bushels - -	20 00
For the greatest quanity of Mangel Wurtzel, or Scarcity Root, on an acre not less than 600 bushels - - - - - -	20 00
For the greatest quantity of Parsnips on half an acre, not less than 200 bushels -	10 00
For the greatest quantity of Ruta Baga on an acre, not less than 600 bushels - -	20 00
For the greatest quantity of common Turnips on an acre, not less than 600 bushels	20 00
For the greatest quantity of Onions on half an acre, not less than 300 bushels - -	15 00

For the greatest quantity of Vegetables, (grain, peas, and beans excepted,) for home consumption, and not for sale, raised for the keeping of stock, regard being had to the size of the farm in proportion to the crop, and to the number of the stock kept; and also to the respective value of the vegetables as food, and the expense of raising the same - - - - -	$30 00
For the greatest quantity of Indian Corn on an acre, not less than 80 bushels - -	20 00
For the greatest quantity of Winter Wheat on an acre, not less than 30 bushels - -	20 00
For the greatest quantity of Barley on an acre, not less than 40 bushels - - -	20 00
For the greatest quantity of Rye on an acre, not less than 30 bushels - - - -	20 00
For the greatest quantity of Millet on an acre, cut and cured for hay, not less than 3 tons, the claimant giving evidence of the time of sowing, the quantity of seed sown, and the quantity of hay produced - - -	20 00
For the greatest quantity of Mustard Seed, not less than 15 bushels - - - -	20 00
For the greatest quantity of dressed Flax, not less than 500 lbs. from an acre - -	20 00
For the greatest quantity and best quality of Hemp on an acre - - - -	40 00

It is to be understood, that the quantity of land specified above is, in each case, to be in one piece. And the claimant of any of the above premiums shall, with one other person, make oath to the following particulars, before some Justice of the Peace, and, with a certificate of the same, shall obtain a certificate of the measurement of the land by some sworn Surveyor.

The particulars are—

1. The condition of the land in the spring of 1832.

2. The product and general state of cultivation, and quality of manure used upon it the preceding year.

3. The quantity of manure the present season.

4. The quantity of seed used, and if Potatoes, the sort.

5. The time of sowing, weeding, and harvesting the crop, and the amount of the product ascertained by actual measurement, after the whole produce for which a premium is claimed, is harvested, and the entire expense of cultivation.

6. Of Indian Corn, the entire crop of the acre to be offered for premium, is to be shelled and measured in the presence of the claimant, who is to make oath to the truth of the statement made by the person or persons, who did harvest, shell and measure it; and to be measured between the fifteenth of November, 1832, and the first day of January, 1833.

7. At least 40 bushels of the vegetables, for which a premium is claimed, except potatoes, onions, and common turnips, are to be weighed free from dirt, and 56 pounds will be considered a bushel.

THE BEST CULTIVATED FARMS.

For the best cultivated Farm - - -	$150 00
For the next best cultivated Farm - -	100 00

The farm to consist of not less than 70 acres, exclusive of woodland. The owner or tenant, to entitle himself to either of the premiums, must state in writing the nature and quality of the soil; the proportions suitable for tillage, mowing, and pasturing, respectively, and especially the quantity of irrigated meadow or low land which is never tilled or ploughed.

The number of acres planted the present year with corn, potatoes, and other vegetables.

The number sowed with winter and spring grains, and other vegetables, specifying the several kinds, and the number of acres planted or sown with each.

The quantity and kind of manure used for each crop, and the times and manner of applying it.

The quantity and quality of each crop.

The number of acres mowed the present year, specifying the proportion of irrigated meadow, or low land, and the proportion which had been ploughed or tilled, and the kind of grass and quantity of hay on each.

Manner of irrigating the lands, and dressing and manuring meadow or low land, and irrigated upland, if any, and laying down tilled land to grass.

The kinds of grass seed sown, the quantity of each, the time of year, and whether sown with oats, barley, or other grain, or alone.

The number of acres of pasture; the part, if any, that had previously been ploughed; when this part was laid down, and the kinds and quantities of grass seed sown per acre.

The number of apple trees on the farm; the proportion grafted; whether planted in orchards or partly by the fences against the road; the quantity of winter apples gathered and cider made; treatment of trees, and manner of making cider.

The form and dimensions of barns, sheds, and barn-yard, and manner of collecting and making manure.

The number of oxen, cows, and young stock, horses, and sheep, kept on the farm through the year, and the quantity of butter and cheese made, distinguishing the new milk from the other cheese, and the breed of cows, whether foreign, mixed, or native.

The number of swine, and quantity of pork made.

The labor employed in carrying on the farm, and quantity of ardent spirits consumed.

As it is deemed important to ascertain the best rotation of crops, it is expected that the applicants for these premiums will state the kind of crop, if not able to state the quantity, raised on the several and respective pieces of tillage, mowing, and pasture land described in their statements, for two years next preceding the present one.

The manner of feeding his stock in the winter season; whether he gives his milch cows or oxen grain or roots of any kind, and the kind and quantity.

His treatment of calves he intends to raise; whether he lets them continue to suck, or weans them soon after born—how soon—what food he gives them, and how long he continues to feed them.

His manner of making cider and cleansing his old barrels, and the time he draws it off, if at all.

The kind of food given to his swine, and the manner in which it is prepared.

The age at which he finds it most profitable to make beef of his working oxen and good milch cows.

If it be a sheep farm, the manner he treats his sheep in the winter; whether they are housed or left out in the yard, the food given them, and the time they generally lamb.

The whole statement to be sworn to by the applicant. The Trustees to be at liberty, in all cases, before they award the premium, to visit by a committee, or such other persons as they shall appoint, the farms of the applicants, if they deem it expedient.

N. B. Claims to be addressed to BENJAMIN GUILD, *Esq., in Boston, (post paid) before the first day of October next; and the evidence to support them to be sent as above, on or before the first day of January,* 1833.

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For a new, effectual and satisfactory mode of extirpating the Borer which attacks the apple tree .	50 00
For any newly invented Agricultural Implement, or machine, superior to any designed for the same use,	

that shall have heretofore gained a premium, a reward not exceeding twenty dollars, according to the importance of the invention . . . $20 00

To the person, who shall prove to the satisfaction of the Trustees, that his mode of rearing, feeding and fattening neat cattle is best 20 00

TREES AND LIVE HEDGES.

For the largest plantation of the White Mulberry tree, not less than two thousand plants, nor less than *three* years old, to be claimed on or before the 1st of December, 1832 . . . . 50 00

For the greatest quantity of raw or unmanufactured silk, not less than *ten* pounds, raised by the claimant, and presented before the 1st of December, 1832 . . . . . 20 00

For the best plantation of White Oak trees, not less than one acre, nor fewer than 1000 trees per acre —raised from the acorn—not less than *three* years old, and which shall be in the most thriving state on the 1st of September, 1832 . . . 100 00

For the best plantation of White Ash, Larch, or Yellow Locust trees, each of not less than one acre, nor fewer than 1000 trees per acre, to be raised from the seeds, and which trees not less than three years old, shall be in the most flourishing state on the 1st September, 1832 . . 50 00

For the best Buckthorn Hedge, not less than 100 rods and which shall be in the most thriving state in 1832 . . . . . 50 00

Claims under the two last heads, together with the proper evidence, must be delivered to BENJAMIN GUILD, *Esq., in Boston, free of expense, on or before the first day of January*, 1833.

FOR DOMESTIC MANUFACTURES.

For the best $\frac{1}{4}$ Woollen Blankets, not less than *ten* pairs, ... $50 00

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For the best Linen Shirting, not less than *fifty* yards 30 00
For the best Sewing Silk, not less than *ten* pounds . 30 00

All the above must be manufactured within the state of Massachusetts. And all manufactures, when presented, must have a private mark, and any public or known mark must be completely concealed, so as not to be seen or known by the Committee, nor must the proprietors be present when they are examined. In default of either of these requisitions, the articles will not be deemed entitled to consideration or premium.

Gratuities will be given, as in former years, for specimens of useful and ornamental manufactures, of extraordinary quality, presented at the Hall for exhibition.

PLOUGHING MATCH.

On the 17th day of October, premiums will be given to the owners and ploughmen of the three ploughs, drawn by two yoke of oxen, and to the owners and ploughmen of three ploughs drawn by one yoke of oxen, which shall be adjudged by a competent Committee, to have performed the *best work* with the *least expense of labor*, not exceeding half an acre to each plough. Entries may be made of the names of competitors until themorning of the 17th. Preference will be given to those who enter first —but if, on calling the list at the hour appointed, precisely, those first named do not appear, the next in order will be preferred. There will be two Committees, of three persons each— one to be judge of the ploughing by double teams, the other of the ploughing by single teams;—the latter to have assigned to them a part of the field distinct from that of the double teams.

Premiums as follows, [being the same for the double and single teams:—]

First Plough, $15	Second Plough, $10	Third Plough, $6
Ploughman, 8	Ploughman, 5	Ploughman, 3
Driver, 4	Driver, 3	Driver, 2

In each case, if there be no driver, both sums to be awarded to the ploughman.

To the plough which shall be adjudged best of all those used at the ploughing match . . . $10 00

Those who intend to contend for these prizes, must give notice in writing to the person who shall be appointed for that purpose, in Brighton, whose name will be seasonably published. The competitors will be considered as agreeing to follow such rules and regulations as may be prescribed by the Committees. The ploughs to be ready to start at 9 o'clock, A. M.

RULES AND REGULATIONS.

Animals may be offered for a premium at Brighton, notwithstanding they have received a premium from a County Agricultural Society.

All Manufactures and Implements, and also the Butter and Cheese to be offered for a premium at the Cattle Show, must be brought to the Society's Hall in Brighton, and entered on Monday, the 15th day of October next, to be examined on the 16th.

All entries of animals for the pens, or as working cattle, must be made before Tuesday evening, the 16th.

The Ploughing Matches will commence on Wednesday morning, at half past nine o'clock, *precisely*.

Trial of Working Oxen at eleven o'clock, precisely.

The public sales of Manufactures and Animals at twelve o'clock.

The applicants will be held to a rigid compliance with the rule relative to entries, as well as the other rules prescribed.

Besides such animals as may have been offered for premiums, any others that are considered as possessing fine qualities

will be admitted for sale. And for all animals or manufactures, that are intended to be sold, notice must be given to the Secretary, before ten o'clock of the 17th. Auctioneers will be provided by the Trustees.

It is understood, that whenever, merely from want of competition, any of the claimants may be considered entitled to the premium, under a literal construction; yet if, in the opinion of the judges, the object so offered is not deserving of any reward, the judges shall have a right to reject such claims. Persons to whom premiums shall be awarded, may, at their option, have an article of plate, with suitable inscriptions, in lieu of money.

In cases where pecuniary premiums are offered, the Trustees may, having regard to the circumstances of the competitors, award either the Society's gold or silver medals, in lieu of the pecuniary premium annexed to the several articles.

That if any competitor for any of the Society's premiums shall be discovered to have used any disingenuous measures, by which the objects of the Society have been defeated, such person shall not only forfeit the premium which may have been awarded to him, but be rendered incapable of being ever after a competitor for any of the Society's premiums.

Time of paying Premiums.—The Treasurer will attend at the Hall at 5 o'clock, P. M. on the day of the Show, and on the next day from 9, A. M., till 12, M., to pay all premiums awarded.

All premiums not demanded within six months after they shall have been awarded, shall be deemed to have been generously given to aid the funds of the Society.

By order of the Trustees,

JOHN LOWELL,
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} *Committee.*

January, 1832.

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The writer in the Edinburgh Review observes, "It does not appear indeed why the learned editor has retained the defective and erroneous text of former editions, and placed the genuine language of Lord Clarendon in the margin. The reverse order would have been perhaps more convenient." This is so evident, that the present publishers have followed this hint. Indeed it is absurd to exhibit a false and corrupted text, and to refer the reader to the margin for the true reading. In the very handsome and correct English edition, the attention of the reader is drawn away repeatedly in every page, to compare and correct the text of the history. This is beyond measure vexatious and irksome.

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THE

Massachusetts Agricultural

REPOSITORY and JOURNAL.

NUMBER II.....VOL. X.

CONTENTS.

The Proceedings and Reports of the Brighton Cattle Show in October, 1827 . . . 97
The Culture of Silk 132
History of Silk 138
History of Silk in the United States 145
Raw Potatoes bad for Milch Cows 154
One of the Diseases of the Peach Tree 156
Lorain's Husbandry 159
New Presents of Fruits . . . 205

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REPOSITORY AND JOURNAL.

VOL. X.—NO. III.

CONTENTS.

Address, by John C. Gray, Esq. 209
Committees—Brighton Cattle Show, 223
Reports of same, viz.
" on Fat Cattle, . . 224
" on Cows, Heifers, Bulls and Bull Calves, . . . 226
" on Sheep and Swine, . 230
" on Ploughing with two Yoke of Oxen, . . . 232
" on Ploughing with one Yoke of Oxen, . . . 234
" on Working Oxen, . . 235
" on Useful Inventions, . 236
Letter of Dr Nichols respecting his improvement in the Harrow, . 239
Report of Committee on Butter, Cheese and Cider, ... 241
Report of Committee on Manufactures, 242
" " on Butter, at the Exhibition in Boston, Dec. 1830, 244
Report on Grain, Vegetable Crops, &c, 249
Letters accompanying same, viz.
From T. Little and H. Little on Wheat, . . . 250
" B. B. Howard on Barley, 251
" R. Adams, Jr, on Winter Rye, 253
" P. Williams on Potatoes, 254
From G. Foster, on Mangel Wurtzel, ... 257
" H. Colman on Ruta Baga, 261
" Jos. Perkins on Onions, 263
" W. Buckminster on Turning in Green Crops as Manure, 264
" Same, on Bog Mud as Manure, 268
" Same, on Yellow Locust, 270
" J. Stone on Destroying the Bee Moth, . . . 272
" D. Prouty on Extirpating the Borer, ... 273
Report on best Cultivated Farms, 274
Letter accompanying same, from Jona. Allen, ... 280
do, from Erastus Ware, . . . 285
Report of the Brighton Market for 1830, 291
On Wood Land and Forest Trees, by John Welles, Esq. . . . 293
On Asparagus, by same, . . . 301
On Grasses, by John Lowell, Esq. 303
On Bone Manure, for wet Meadows, by same, ... 310
On Grafting the Grape, . . . 311
On Milch Cows, ... 312
Society's Premiums for 1831, . . 314

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VOL. X.—NO. IV.

CONTENTS.

Introductory Remarks, - - 325
List of Officers, - - - - - 334
OFFICIAL REPORTS—
On Exhibition of Butter and Cheese, 336
" Vegetable and Grain Crops, - 339
Letters accompanying the same, viz:
From Payson Williams, - - 341
" Joseph Perkins, - - 344
" John Wilson, - - - 344
" Henry Sprague and Albert Sprague, - - 346
Report on the Best Cultivated Farms, - 348
Letters accompanying the above—
From Merrill Allen, - - - 357
" Peter Thacher, - - - 363
" Jonathan Allen, - - - 379
Report on Experiments, Discoveries and Inventions, - - - - - - 379
Letter from Dr. Thacher, on the best Method of destroying the Bee-Moth, - 387
Letter from Rev. J. R. Barbour, describing his Model of an Apiary, - - 393
Letter from the same, describing Apparatus for transferring Bees from one hive to another, - - - - - - 395
Letter on the same, from Gorham Parsons, Esq. - - - - - - 404
Letter from John Mackay, describing his Apple Orchard, - - - - - 407
Letter from John Lowell, Esq. on the Destruction of the last Year's Wood in Fruit Trees, - - - - - - 408
Letter from the same, on Live Hedges for New-England, - - - - - 411
Some Notice of the Aracacha, and of the laudable Efforts to introduce it into the United States, - - - - - 411
Result of an Attempt to cultivate the Aracacha, - - - - - - 418
On Imported Stock, by John Welles, Esq. - - - - - - - - 425
Smithfield Cattle Show, - - - 428
Society's Premiums for 1832, - - 431

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